PHYSICAL DETERIORATION ITS CAUSES & THE CURE

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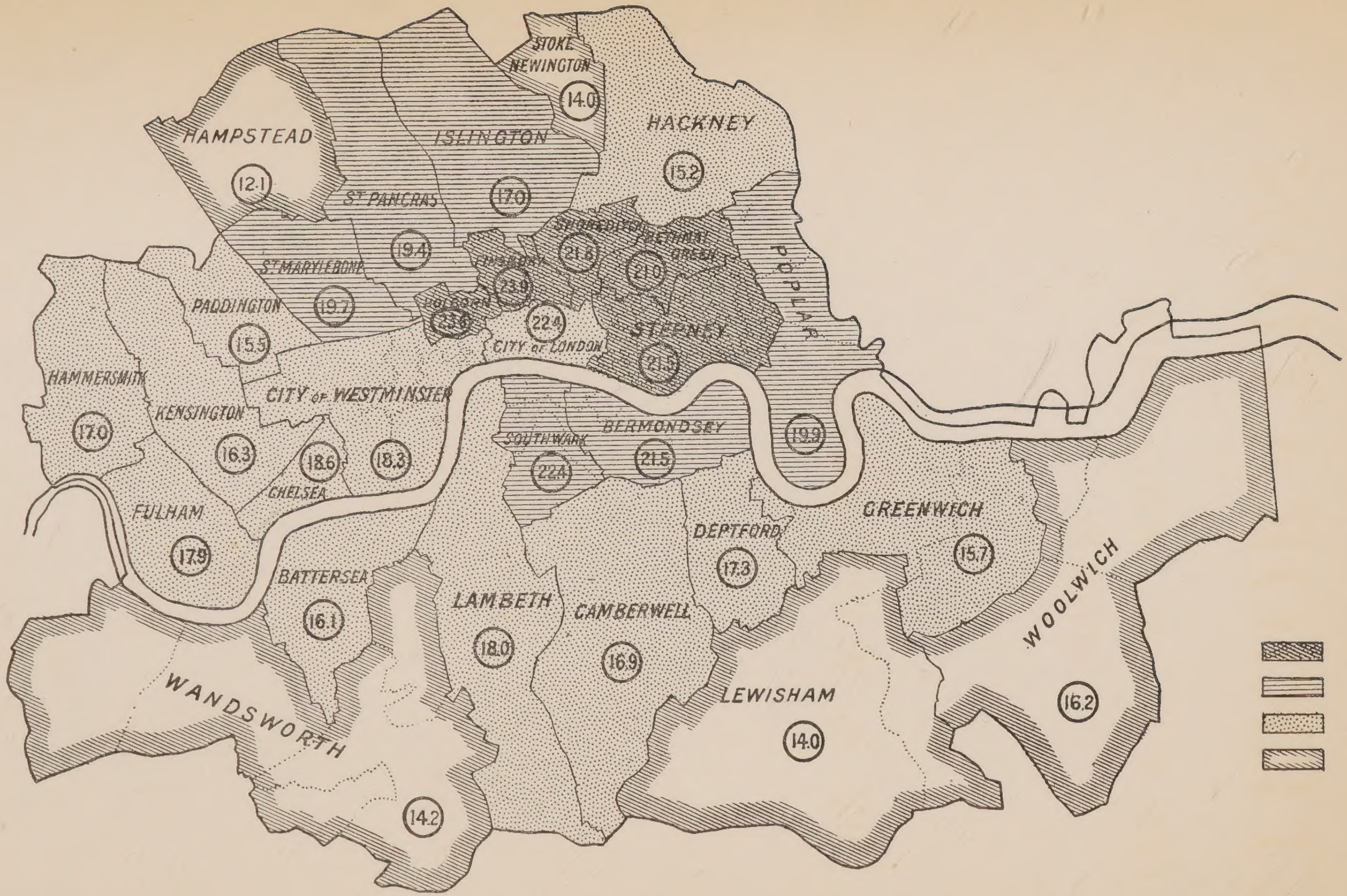

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PHYSICAL DETERIORATION

ITS CAUSES AND THE CURE

BY A. WATT SMYTH

LONDON
JOHN MURRAY, ALBEMARLE STREET, W.
1904

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PREFACE

In the following pages I have brought together the main facts concerning the causes of physical deterioration which have long been recognised by those acquainted with the people of slums, and to which recent recruiting statistics have called public attention.

The chief causes producing the physical unfitness proved to exist are, the crowding of the population into towns, where the housing and general conditions of life are unfavourable to the healthy growth of children; the deplorable effect on infant health of the neglect of sanitary precautions with regard to the milk supply; the inadequate individual attention given in most elementary schools to the physical training of the children compelled to attend them; the very general failure to give to girls in the schools instruction in hygiene, domestic economy, and the management of infants; and the want of reasonable opportunities for healthy recreation.

In the study of the causes of these evils, remedies naturally suggest themselves.

While public interest has been aroused in children when at school, scant attention has been given to the infinitely more important question of the first two or three years of child life. Wise feeding and care up to the age of say three years will give any child, not constitutionally unsound, a good start in life ; whereas the evil consequences of ignorant management during those early years will never be overcome. The prevailing ignorance of mothers in the feeding and care of infants should be combated. As future mothers, all school-girls should receive intelligent instruction in the care of infants, hygiene, and cooking.

Milk is essential to the rearing of children, but it is hardly too much to say of the milk supply, especially as it reaches the poor, that infants are better without it. As a first step, rules for safeguarding the purity and cleanliness of the milk, now to a large extent permissive, should be made compulsory on all local authorities.

Records should be systematically kept of the height and weight of school children, so that the degree of deterioration and the effect of reforms tried may be known. Incredible as it appears, no such records are at present available, although, as is pointed out, it would be a simple matter to keep them involving no expense and little time, while forming most valuable data for national guidance. A simple chart and record table will be found in this book, by means of which any school teacher could record the weight and height (with a few general observations) of children attending schools. By this means interesting comparisons could be made in different classes and districts, and a reliable standard arrived at for the different ages of school life. It is earnestly to be hoped that the new Educational Authorities may see the importance of carrying out this suggestion.

The excellent physical training given in some schools should be made universal and obligatory, more time being devoted to it; and recreation centres, which are urgently needed, should be instituted to keep children out of the streets A system of medical supervision should exist in all schools, with a view to singling out those children who require special physical exercises, and in order to check infectious diseases. This would not involve much expense, and would prevent much unfitness.

Finally, more extensive and systematic efforts should be made to induce people to remain in rural districts, by encouraging small holdings and intensive cultivation, and also by extending the system of establishing factories with model villages in the country where land is cheap. So long as the rural population flocks to the towns, it is obvious that deterioration must go on increasing steadily.

I wish to express my acknowledgments to the Editor of the *British Medical Journal*, for permitting me to use in this book some of the material contributed by me to that periodical; to Mrs Humphry Ward, for her kindness in allowing me to see the working of the recreation classes she has established at the Passmore Edwards' Settlement; and to Mr Chesterton, for enabling me to study the system of physical training organised by him for the London School Board.

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PHYSICAL DETERIORATION

CHAPTER I

HISTORICAL

> *"Because men are all members of one great whole, and the sympathy which is in human nature will not allow one member to be indifferent to the rest, or to have a perfect welfare independent of the rest, the expansion of our humanity, to suit the idea of perfection which culture forms, must be a general expansion."*
>
> MATTHEW ARNOLD, "Culture and Anarchy," p. 9.

Effects of early Sanitary Legislation. Sir Frederick Maurice's Warning. The Royal Commission on Physical Training (Scotland).

Two generations ago, largely through the insistence of Sir Edwin Chadwick and the Earl of Shaftesbury, the public mind was aroused to the fact that the conditions under which men, women, and children had to live and work in towns, were such as to produce physical deterioration, disease in every form, and a heavy death-rate at all ages.

Sir Edwin Chadwick was the leading spirit of the band of devoted men and women whose labours resulted in laying the foundations of sanitary legislation, while Lord Shaftesbury, almost single-handed, carried through legislation to regulate the conditions of labour in factories and workshops, and to place child labour under public control.

Had the insanitary conditions of towns, the overcrowding in tenement dwellings, and the long hours of work in ill-ventilated workrooms been allowed to continue, and even, as would certainly have been the case, to increase unchecked, the imagination fails to picture the squalor and misery which would have now existed in our towns.

The effect of the Public Health Acts, of improved Local Government, and spirited sanitary administration in most large towns, had been manifested in the decline of the death-rate and the prolongation of the average span of life. The impressive statistics, quoted so frequently from the platform and in the newspapers, had lulled us into a false sense of security and superiority. We forgot that the causes which had produced the conditions of early Victorian days were still at work, especially that the flow from country to town not only continued but increased with each decade, and that thus the problem which the sanitary administrator and the school authority had to face was steadily growing in complexity. So self-satisfied were we, that nothing short of a great national peril could have saved us from drowning in that river of Lethe in which we were plunged. The facts which came to light during the South African War revealed to us our true position, and the public which had rejoiced vicariously in the triumphs of the heroes of the football field and the cycle track, were dismayed to learn that of those who wished to serve their country in her day of trial a startling number were found physically unfit to carry a rifle, and that even of those who passed the recruiting officer a large proportion were deficient in the physical stamina and the moral qualities which go to make a soldier. Facts, with regard to recruiting were, however, already exercising the minds of a few thoughtful men.

The first to speak out his mind was Major-General Sir Frederick Maurice, K.C.B. For many years it had been his duty to visit the Herbert Hospital at Woolwich, which takes in the sick of the Woolwich Garrison and men belonging to the Artillery invalided from abroad. He was called upon to sanction the discharge from the Army of men brought forward by a medical board as unfit for service. He found that an alarming proportion of the men, as soon as they had been given an average amount of work, broke down in health, and that, even if they were patched up in hospital, the chances were that they again broke down when they went back to work; this involved the State in considerable expense for no return.

In an article on the National Health published in the *Contemporary Review*,* Sir Frederick Maurice stated that out of every five men who wished to enlist and primarily offered themselves for enlistment, after two years, only two remained in the Army as effective soldiers. As the proportion-figure of two effective soldiers out of every five referred only to men up to two years' service, very few found unfit within that period could be men who had served abroad. It followed, therefore, that 60 per cent. of men wishing to be soldiers were unfit for military service.

Sir Frederick Maurice divided the rejections into three classes:—

1. Men not considered worth taking before the examining medical officer.

2. Men rejected as the result of the medical examination.

3. Men who broke down in the service itself within two years of enlistment.

---

* January 1902.

The third class was subdivided into :—

(*a*) Men found unfit within three months of enlistment.

(*b*) Men invalided after the first three months' and up to two years' service.

The recruiting statistics only deal with class 2 and 3, the bulk of the men rejected being from class 2, a very small proportion from class 3 (*a*), and a much smaller proportion from class 3 (*b*). Sir Frederick Maurice went on to say: "To me it seems a vital matter for us to inquire what is the meaning between the five and the two. Does it mean that the class which necessarily supplies the bulk of the ranks of our army consists in this large proportion of men physically unfit? If so, what are the causes of this fatal condition of things, and are they remediable?" He traced the physical breakdown to heart-weakness, pulmonary troubles, and rheumatism, connected with the low anæmic condition of the whole body. Next in order of importance in the list of causes of rejection came flat feet, tending to make marching impossible, and bad teeth, causing indigestion.

Sir Frederick Maurice analysed the cause of these diseases—bad teeth he attributed to improper feeding during infancy and early life, ignorance of the mothers and scarcity of milk, and early marriages resulting in weakly children whom the parents are unfitted to rear. He asked whether the figure of five to two implied that the class from which the nation has drawn the bulk of its soldiers is ceasing to supply the same number of healthy men that it used to supply: and if so, why? In answer to this question he pointed to the continuous rush of the people from rural districts to towns owing to agricultural depression, and their failure to earn adequate wages when they got there because only skilled labour commands good pay: and to the presumption that neither the unskilled labourer who has been tempted into towns, nor the hereditary townsman who, after two or three generations has physically deteriorated, will be able to rear a healthy family. From whatever cause the physical unfitness of three out of every five soldiers arises, Sir Frederick Maurice rightly says that to fold our hands and treat the question as insoluble, is to commit the greatest of civic crimes—that of despairing of the State. "It is to the condition, mental, moral, and physical, of the women and children that we must look, if we have regard to the future of our land. . . . If we could in a generation or two, either by better education of the mothers, or by the creation of more favourable conditions, make all of the five as virile as the two, I think that were the better way. Those are such splendid fellows that I wish we could get more like them."

In March 1902, a Royal Commission was appointed, with the Earl of Mansfield as chairman, to "inquire into the opportunities for physical training now available in the State-aided schools and other educational institutions of Scotland; and to suggest means by which such training may be made to conduce to the welfare of the pupils; and, further, how such opportunities may be increased, by Continuation Classes and otherwise, so as to develop, in their practical application to the requirements of life, the faculties of those who have left the day schools, and thus to contribute towards the sources of national strength."

The Commission took a good deal of evidence and presented a valuable report in March 1903. In this brief summary of the recent history of the subject, however, it will be sufficient to direct attention to the facts and opinion contributed by Deputy Surgeon-General W. G. Don, M.D., A.M.S., who as Senior Medical Officer, London recruiting district, for seventeen years had a very exceptional experience in recruiting. During this period he personally examined over 100,000 applicants, and had therefore endless opportunities for observing the physique of boys, recruits, and reservists. He pointed out that his experience was not such as would fall to those who might conduct medical and anthropometrical examinations indiscriminately among the youthful population at large, inasmuch as recruits brought before the medical officer have already undergone a rough primary selection by the recruiters, whereby those obviously undersized, or who present visible physical defects, are largely eliminated. He laid great stress on the fact that boys of the same age vary to the most marked extent as to physical development. He had found that boys of the declared and verified age of 14 or 15 might look not more than 11 or 12, while others presented the development of lads of 18 or 19 years. This, he thought, could not be wholly ascribed to or determined by variation in food, environment, or physical training in childhood, but rather to inherent elements of growth in individuals—whether through heredity or otherwise. For instance, in the Gordon Boys' Home the boys, passed in as healthy and likely to grow to average-sized men, presented extraordinary variations in development, which could only be ascribed to individual peculiarity. But it was noteworthy also that boys reared in healthy environment, with good food and judicious physical training, had superior development, especially in chest and weight, to those less favourably reared. Surgeon-General Don gave the following table for the average normal development of boys between 14 and 16 :—

Between 14 *and* 15 *years.*

	Min.	Max.	Mean.
Height .	54	60	57 inches.
Weight .	70	85	78 lbs.
	Min. (quiescent).		Max. (expansion).
Chest . .	27		30 inches.

Between 15 *and* 16 *years.*

	Min.	Max.	Mean.
Height .	57	63	60 inches.
Weight .	75	100	90 lbs.
	Min. (quiescent).		Max. (expansion).
Chest . .	28		32 inches.

Among boys, height and weight, the latter chiefly from growth of the lower limbs, increased more rapidly than chest girth. Tall youths had often defective chests, short lads better ones; it would almost seem, he said, as if perpendicular and horizontal growth were carried out at the expense the one of the other. Youths of 17 were enlisted for the militia, and between 17 and 18 should be 62 in. and upwards in height, 105 lbs. in weight, and in chest measurement 31 in. (minimum), and upwards.

Surgeon-General Don said: "I am convinced that judicious physical and military drill, if combined with sufficient food and healthy environment, will signally contribute to the moral as well as to the better physical development of boyhood and early manhood. . . . Militia recruits often gain from 5 to 10 lbs. in weight and an inch chest girth during a seven weeks' training." He then wisely remarked that physical defects seen in recruits might largely be prevented or modified during the period of boyhood growth. Defects and deformities of the feet, for example, were very largely due to ill-fitting foot gear. Again, if skilful dentistry were employed and the evils of oral sepsis and uncleanliness pointed out, much might be done to remedy the evil of decayed teeth, another cause of rejection. He believed that many a boy and girl could be saved from unsightly deformity by simply raising the boot heel of the short limb sufficiently to bring the hips into a horizontal level in walking, for it was a fact that perhaps one person in forty had one leg more or less shorter than the other. He recommended special shoes to be worn for drilling.

Surgeon - General Don laid stress on the fact that physical training should be combined with sufficient food if good results were to be obtained. Great care should be exercised in giving physical training to underfed children, and steps should be taken, as far as possible, to see that the underfed were better fed. Training was bad unless the muscular system received sufficient food.

Finally, he said that looking back at the farce of passing recruits in 1858, when he first entered the service—no measurements, no vision tests, no stethoscoping—he could not help thinking that the Army was now a very much better selected body than it ever had been. The class of men offering were, he thought, better than twenty or thirty years ago, and he was of opinion that there was no deterioration in the race generally, even in the urban young men. They were better fed, and the population as a whole was on a somewhat higher plane than it was forty or fifty years ago. He was absolutely certain that through education and military training, less drunkenness and fewer petty offences, the moral tone and intelligence of the men had materially increased.

What effect this optimistic evidence, which it is thought only fair to quote, had upon the members of the Royal Commission is not clearly stated in their report. In fact, they deliberately declined to answer the question as to whether or not there exists a progressive deterioration of the slum population of Great Britain or of the inhabitants of its large towns as a whole. "It is enough," the report stated, "that we find, by comparing the statistics of Aberdeen and Edinburgh, and quite as much by comparing those of the better with the poorer schools in Edinburgh itself, evidence, that, whatever may be the case with the population as a whole, there exists in Scotland an undeniable degeneration of individuals of the classes where food and environment are defective, which calls for attention and amelioration in obvious ways, one of which is a well-regulated system of physical training."

CHAPTER II

PHYSICAL UNFITNESS OF RECRUITS

"If I be not ashamed of my soldiers!"
SHAKESPEARE.

Causes of Rejection of Recruits. The Director-General's Memorandum. The Reports of the Royal Colleges of Physicians and Surgeons. The Army as a School of Physical Culture.

THE publication of the report of the Royal Commission on Physical Training in Scotland unquestionably produced a considerable effect on the public mind. Englishmen asked themselves whether the conclusion that physical degeneration existed in Scotland was not likely to be even more true of England. Attention was called to the matter in Parliament, and particularly to a statement contained in the report for 1902 of the Inspector-General of Recruiting, to the effect that "the one subject which causes anxiety in the future, as regards recruiting, is the gradual deterioration of the physique of the working classes, from which the bulk of the recruits must always be drawn." Finally, in April 1903, the Director-General, Army Medical Service, drew up a memorandum on the physical unfitness of men offering themselves for enlistment in the Army. In this memorandum the question is asked whether the impeachment of the national health by Sir Frederick Maurice and others has a solid foundation in fact, and whether it is true of the population as a whole, or only of a certain section of it. It is pointed out that in spite of the large proportion of men found physically unfit for service in the Army, the public health statistics appear to show progressive improvement in the national health, and that feats of strength, agility, and endurance would point at any rate to improvement in the physique of the well-to-do classes. Yet the question we have to face is, if this large proportion of the community is unfit for military service, what is to become of those rejected? For what occupation are they fit? According to the last census 25 millions out of 32½ millions live in towns, the town population having increased 15 per cent. during the last decade. The bulk of our soldiers are drawn from the class of unskilled labourers, and the highest number of rejections are among men employed in indoor occupations. The deterioration of the physique of the urban poor is attributed to insufficient and poor quality of food, defective housing, overcrowding, and insanitary surroundings. Add to this want of thrift, illness or death of the breadwinner, alcoholic excess, and acquired disease.

In the Director-General's memorandum statistics are given relating to the principal causes of rejection for the twelve years, 1891-1902. They show that the majority of rejections are due to causes indicating poor physical development, small chests, low stature, and insufficient weight: in fact, to stunted growth.

The table (see Appendix II.), however, does not represent the whole of the unfitness, for, to the figures contained in it, must be added the large number of men rejected by recruiting sergeants and recruiting officers. Such men do not come up before the medical officer, and do not, therefore, appear in any returns.

Of the 77 per cent. of the population estimated to live in towns, about 25 per cent. (probably at least 6,000,000) would appear, from trustworthy investigations, to be not only poor, but living in actual poverty, so as to be unable to rear their children under conditions favourable to health and physical fitness. The bulk of men offering themselves for enlistment belong to this section of the population and prove unfit for military service.

The Director-General sums up as follows: "The question at issue constitutes a problem by no means easy to solve. Were all classes of the community able to provide their offsprings with ample food and air space, a healthy race would be produced, and the proper material to fill the ranks of the Army would probably be soon obtained. Information is wanted as to the causes of physical deficiency and as to the best available methods of remedying defects and improving the national health. Such an inquiry might fitly be undertaken by a commission as to the composition of which the advice of the Colleges of Physicians and Surgeons might be asked."

Accordingly, the Government addressed communications to the Royal Colleges of Physicians and Surgeons in London, inviting them to express an opinion upon the three following points:—(*a*) The necessity for an inquiry, (*b*) the ground to be covered by a commission if appointed, and (*c*) the composition of the commission. The Royal College of Physicians in its reply, pointed out that the statistics given by the Director-General showed that there had been no increase in the proportion of rejections; that the increase in the rate of wages in all forms of labour must have tended to diminish the attractions of a military career for men in regular employment, and that therefore a proportionately larger number of casual labourers and "the unemployed," classes in whom the lowest standard of physique was to be found, must now offer themselves for enlistment. Nevertheless, the College expressed the opinion that an inquiry into the present physical condition of the nation would be of great value, though one dealing with a portion only of the population would be likely to lead to error. As reasons for desiring such inquiry, it was observed that great changes in the conditions of life had taken place during the last fifty years, especially in regard to the character of the food, the compulsory education and confinement in schools of young children, and the altered conditions of female labour in towns.

The Council of the Royal College of Surgeons presented an elaborate critical report (see Appendix I.). Here again attention was directed to the fact that the Army statistics did not prove that the number of men offering themselves for enlistment who were found to be physically unfit was increasing, although there were reasons for believing that, as compared with former times, most would-be recruits were drawn from a class physically inferior. The report then pointed out that social and economic changes during recent years had raised the comparative standard of efficiency of workmen, the standard of living, and the rate of wages, and that while the better educated, the more intelligent, and the more active and industrious were attracted to the better paid occupations, there was a large and probably growing residue, more or less unfit, who failed to obtain regular employment. It was from this residue that the Army had to obtain the larger proportion of its recruits. Though this reflection, it was added, might be disquieting, there was no evidence that the physical disabilities of this class had increased or were increasing. The report pointed out, further, that while the Army statistics showed a steady decline in the rate of primary rejections, they disclosed an increase in secondary rejections—that is to say, rejections within three months of enlistment or after two years' service. Though the causes of such rejections were not given, it was considered reasonable to presume that many were due to preventable causes, physical or moral. As grounds for the belief that many of the causes of disability would tend to grow less, the following facts were mentioned:—(1) The greater attention now paid in schools to the general health of children, to physical training, and to the care of the sight, the hearing, and the cleanliness of the mouth and teeth; (2) the spreading influence of various social, municipal, and philanthropic agencies for the promotion of the public health, and the strengthening of the character of the individual. It was added that many of the grounds of physical disqualification for the English army, such as defects in vision, weight, height, and teeth would, in countries where conscription obtains, be much less important factors in judging of the fitness of men for military service. The general conclusion of the report was that, while there was no need for a large inquiry into the national health, much might be done in a less formal manner by emphasising the necessity of still stricter attention to the health, feeding, and training of school children, and more especially to the care of the teeth, and the arrest of threatened or early decay. Finally, the Council laid great stress upon the recommendation that as much as possible should be done to promote the health, growth, and general physical development of the young soldier by improving his environment, and by the exercise of special care in the selection of the kind and quality of his food, and in its preparation and preservation.

Available statistics, with regard to rejections of recruits offering themselves for the Royal

Navy, are less full than those for the Army, but they have a special interest inasmuch as they refer to a somewhat earlier period of life. A return for the year 1902 shows that of 6169 lads who offered themselves at the Royal Marine Recruiting Offices for the Royal Navy and Royal Marines, 1686 or 27·3 per cent. were rejected as unfit. Of the lads, however, who desired to enter Greenwich Hospital with a view to joining the Navy, just under 33 per cent. were rejected; this, as the Earl of Meath has pointed out, is the more extraordinary, seeing that the lads admitted to Greenwich Hospital must be the sons of former seamen or marines, and it must be supposed enjoy the advantage of having healthy fathers.

The First Lord of the Admiralty, in commenting on the return, observed that the statistics were far from including the whole number of those who applied, as a very large percentage of the applicants were turned away by the recruiting sergeants for some physical deficiency, such as defective teeth, without being brought before the medical officers at all. Greater vigilance on the part of recruiting sergeants may perhaps explain the apparent anomaly that the percentage of rejections for the Navy is a little lower than that for the Army. As a matter of fact the standard for the Navy appears to be higher, as is shown in the case of boys from truant schools, training ships, and industrial schools, who are drafted into the Army without the smallest difficulty, while the Navy only admits a small percentage of picked lads.

While it may be true that the Army is now compelled to draw a larger proportion of its recruits from the lowest classes of the working population, the casual labourer and the unemployed, it must be recollected that the physical standard has been lowered. In 1845 the standard height for admission to the Army was 5 ft. 6 in.; in 1883 it had been lowered to 5 ft. 3 in.; and in 1900 to 5 ft. In 1901 no fewer than 593·4 per 1000 were under the old standard height of 5 ft. 6 in., and 511·8 were under the chest measurement of 34 in. which was the minimum in 1883. The statistics also appear to indicate a progressive decline in the average weight, for whereas in 1871, 159·4 per mille were under 8 st. 8 lbs., in 1901, 325 per mille failed to attain this very moderate weight. Again, if the physical standard to which recruits now attain be compared with that of the race, it will be found that the average recruit of 1900 at the age of nearly 20 years was 2 in. shorter, an inch less in the chest measurement, and 15 lbs. lighter than the average youth of 19 years, according to the measurement of the Anthropometric Committee of the British Association. Whilst giving all due weight to the mitigating circumstances set out in the report of the College of Surgeons, the fact cannot be forgotten that in spite of the lowering of the standard in certain respects, there has been no clear decrease in the proportion of total rejections, and that the decreases which are to be noted relate to those very measurements for which the standard has been reduced. In Germany, on the other hand, the evidence available appears to show that the percentage of the recruits rejected tends to decrease. It must not be assumed that the standard is lower in Germany; on the contrary, statistics go to prove that the average German recruit is taller and heavier than the average British recruit, and that after he has entered the Army he is healthier, spends less time in hospital, and has a lower death-rate.

Before these reports were received, however, the matter had been materially advanced by a debate raised by the Earl of Meath in the House of Lords, in July 1903. Lord Meath rested his demand, that the Government should appoint a Royal Commission with a view to ascertaining whether the poorer populations in our large towns are exposed to conditions which much contribute to produce the low national standard of physical health and strength, mainly on the report of the Royal Commission on Physical Training in Scotland, and the Army statistics. The Bishop of Ripon, who followed, dwelt upon the fact that the birth-rate is declining as a reason for paying at this time special heed to the conditions of town life inimical to health; the Duke of Devonshire made it plain that there was no disinclination on the part of the Government to agree to the appointment of a Royal Commission, and, in fact, admitted that this might be found to be the most expedient course, but argued that some delay was desirable: this delay he justified on two grounds—first, that the general report of the Registrar General and the decennial supplements published after each census were not yet ready; and, secondly, that the terms of reference required most careful consideration.

So much difficulty appears to have been encountered in settling these terms, that early last autumn a Departmental Committee was appointed to report on the scope and nature of the inquiry which a Royal Commission might conduct. This Departmental Committee has been engaged during the winter in taking evidence. Its report may be in favour of a full inquiry, but already two or three years have passed since the main facts with regard to recruiting became public property, and a Royal Commission is not a body which, as a rule, works with rapidity. At the best it will probably be some years before its report is published. Meanwhile, the conditions which render its appointment desirable continue, and it is the object of the following pages to point out, in the first place, the nature of the evil influences producing a large amount of physical unfitness, not only in lads but in girls, which the most optimistic must admit exist; and, in the second place, to indicate how much may be done by local education and sanitary authorities, with the powers they already possess, to remove these causes.

Lord Wolseley has recently expressed the opinion that the Army will never be "in a very satisfactory condition, until we pay our soldiers, at least, according to the current rate of wages given for unskilled labour." This implies that we are at present recruiting from the lowest grades of the labour market. His remedy—to pay a higher rate and so attract a higher grade—might, if it found favour with the Chancellor of the Exchequer, go a long way towards solving the recruiting difficulty. But it would do nothing to improve the national physique. On the contrary, it would tend to still further deterioration.

Sir William Taylor deserves the thanks of the nation for having had the courage to ask the question, "If these men are unfit for military service, what are they good for?" Let it be remembered that the Army ought to be, and under the more enlightened administration of the present day is, to a large extent, a school of physical development. The whole system—the adequate diet, the gymnastics, even the barrack-yard drill will make a raw lad into a well-set up man, if only he possesses the constitution and framework. The splendid results obtained, under the direction of Colonel Fox, from most unpromising material are sufficient proof of this.* If it is not worth while to take a lad for the Army where there is every facility for developing his physical organisation, must we not echo the question, What is he good for? No other employer of labour can be expected to take ill-grown, underfed lads, to feed them and put them through a course of physical drill, in the hope that in a year or so they will turn into robust workmen. He chooses with an eye to the present, not to the future; he wants a man to dig a ditch or handle freight to-day, not this time next year.

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* The following is related in the article on "Gymnastics" in the *Encyclopædia Britannica,* as pointing to the effect of gymnastics upon recruits: "To show that the importance of gymnastics has not been overstated, we may describe the effect produced on twelve non-commissioned officers sent by the military authorities to be trained as teachers for the British army by Mr Maclaren. The men ranged from 19 to 29 years of age, and in height from 5 ft. 5 in. to 6 ft. In Mr Maclaren's own words, 'the muscular additions to the arms and shoulders and the expansion of the chest were so great as to have absolutely a ludicrous and embarrassing result, for before the fourth month several of the men could not get into their jackets and tunics without assistance, and when they had got them on they could not get them to meet down the middle by a hand's breadth.' In a month more they could not get into them at all, and new clothing had to be procured, pending the arrival of which the men had to go to and from the gymnasium in their greatcoats."—*Encyclopædia Britannica,* vol. xi., Article "Gymnastics."

What becomes of the lads and young men unfit for the Army? Physically unable to do a good day's work, they must sink to the level of the most casual of casual labourers; drawing the lowest rate of wages when in work, and thrown out of work by the first depression of trade. Flung upon the streets they hang about the public-houses cadging for odd jobs. They marry early, girls as shiftless and physically unfit as themselves, bringing children into the world, of whom, without postulating any theory of hereditary degeneration, it may safely be asserted, looking to the conditions under which they are born and brought up, that they are not likely to be physically, intellectually, or morally superior to their parents.

CHAPTER III

EVIDENCES OF PHYSICAL DETERIORATION

"There's a divinity that shapes our ends
Rough hew them how we will."
SHAKESPEARE, "Hamlet."

Need for Anthropometrical Investigations of Elementary School Children. Physical Development in Good and Poor District Schools. Urban and Rural Statistics. Injurious Influence of Urban Conditions on Health and Growth of Children.

EXCEPTION has been taken to the use of the terms physical degeneration and physical deterioration on the ground that they beg the question. Do you, these critics say, mean to assert that the children and the men and women of to-day are physically inferior to those of half a century or a century ago; if so, what is the evidence of such progressive degeneration of the race? Or do you merely intend to maintain that a large proportion of the poorer class population fall below some ideal standard of physical development; if so, where is this standard to be found, and how has it been established?

It is true that little statistical evidence has been produced in answer to the first question. It has been characteristically assumed that the British boy, if he was something of a laggard in learning, was a model for all the world in the matter of out-door games and physical activity generally. Statistics were not collected because the need for them was not felt.

The final report of the Anthropometric Committee of the British Association presented in 1883, contains a section upon the growth of children of both sexes and of all classes of the population—(I.) the upper and professional classes; (II.) the commercial classes (clerks and shopkeepers); (III.) the labouring classes following out-door occupations; (IV.) artisans in towns. In this report a table is given which shows a falling off in the average stature of children of the age of 11 to 12 years, as the conditions under which they lived were less and less favourable to healthy physical development. A corresponding deficiency was observed in adults. The children varied in height to the extent of 5 in. and the adults to 3½ in. Similar variations were observed in the weight and other physical qualities.

The accompanying table founded upon one

published in this report, shows the average height and weight of children from the age of 5 to 13 years inclusive, in all classes of the population, as contrasted with that of children of the artisan class resident in towns.

TABLE *showing average height and weight of male children of all classes, and of the artisan class in towns.*

(Founded on the Report (1883) of the Anthropometric Committee of the British Association.)

Years.	Height in inches.		Weight in lbs.	
	General. All Classes.	Artisans. Town.	General. All Classes.	Artisans. Town.
5	41	40	40	41
6	44	42	44½	44½
7	46	44½	50	51
8	47	46½	55	54
9	50	49	60½	58
10	52	51	67½	64
11	53½	52½	72	69
12	55	54	76½	73
13	57	56	82½	79

Fractions less than a half have been disregarded.

It will be observed that the height and weight of town children was below that of the general population. A comparison is also made with children in industrial schools, in whom physical inferiority was still more conspicuous, so that the average height of a boy of 16 in one of these schools was only a fraction of an inch more than the height of the average boy of 13.

Even now statistics are not being collected systematically or on a large scale. None of the school boards seem to have taken any steps to obtain such statistics. The National Society for the Prevention of Cruelty to Children has obtained leave to make a beginning in London and Liverpool, and is endeavouring by measurements made out of school hours to establish a standard of height, weight, and other physical conditions. But the work ought to be done by the Education Authority itself. A partial inquiry would be practically useless; it must be general, and must take into account the differences of race, for that such difference exists, say between the English and the Welsh—the latter, though strong and healthy as a whole, being a smaller people—is well known. Then there is the comparative poverty of different districts, the average physical development being lower in the poorer districts. The inquiry must therefore embrace all classes of schools, in order, in the first place, that the statistics may be sufficiently large to furnish a general standard, and, in the second, to allow comparisons to be made between sections of the population living under different conditions. Mr Seebohm Rowntree has realised the necessity for this. In discussing some statistics which he had collected, he writes: "It would have been interesting had we been able to compare the weights and heights of the children with some national standard, but for the purposes of this inquiry such a standard would have been unreliable. The average heights and weights vary in different parts of the country, and consequently a comparison of results in two districts might be due to racial differences, and not to the nourishment and physical condition of the people." *

It would not be difficult if every school were provided with a weighing machine and measuring rod, to measure and weigh all the children in each school by degrees, class by class. This could be done in the hall, say after a drilling lesson, the class teacher measuring or weighing while the headmaster made the entries. The results should be carefully recorded in a methodical manner in a register. Forms are herewith given which might serve as a basis for such records. It would be necessary to take such observations twice a year, as there is a normal variation amounting to as much as 2 or 3 lbs. of weight in winter and summer, and they should be continued during the whole period of school life.

It may be objected that this innovation would take time and labour, but, as a matter of fact, if the children were only weighed and measured,

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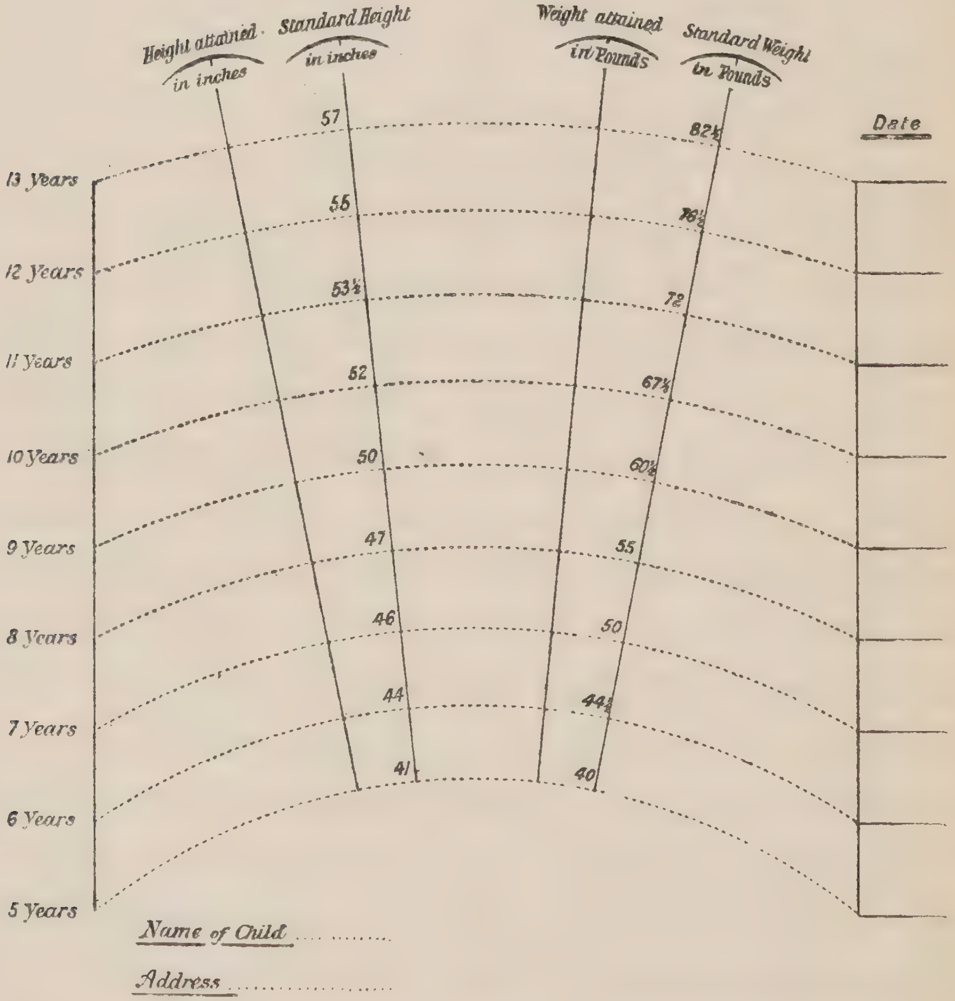
* *Poverty: a Study of Town Life*, London, 1902, p. 209.

the school teachers could undertake the task with very little expenditure of time or trouble.

The information obtained would be far more

Chart to register Weight and Measurement of School Children.



valuable if observations on the chest girth, on the sight and hearing, and on the general aspect and health of the child were made also, and it is to be hoped that when the medical supervision of schools is made effective, as it is in Sweden, these additional facts will be recorded.

This system of weighing and measuring would, if carried out in all the classes in a town, present many advantages. In the first place, it would be a guide to the teachers in deciding whether children who appeared to be underfed received a sufficient amount of nourishment. If a child failed to increase in weight and height it would be presumptive evidence that it was not receiving sufficient food or was being

Sample Record Table.

Date	Name of Child	Age	Height. Inches	Weight Pounds	Statement as to general Health

subjected to some other injurious conditions at home. It is no doubt true that some children remain thin and undergrown no matter how much food they get, but this is the exception, and as a general rule slow development is not due to congenital weakness, but may be traced to improper feeding. If this duty of periodically weighing and measuring the children in their classes were imposed upon the teachers, it could not fail to increase their interest in the physical development of their pupils. Class teachers should be taught to consider it as much to their honour to have a class of well-grown, healthy boys or girls, as to succeed in passing some young prodigies through Standard VII. before they are 13. Sir John Gorst has offered the excellent suggestion that it should be "the duty of every class teacher to make such a daily inspection of the children in the class as an officer in the Army and Navy makes of the men under his charge, and to record and report anything abnormal — hunger, nakedness, dirt, or disease." Thus daily inspection, coupled with periodical weighings, would train the teachers to recognise early the first signs of failure in health, and would help them to become skilful in detecting the earliest signs of the acuter diseases. To watch the health of the children should, indeed, be considered one of the ordinary duties of a teacher, and skill and care in its performance ought, as Sir John Gorst has also suggested, to be reckoned among qualifications for promotion. In the second place, the body of statistics obtained would deal with a very large number of children, and if properly analysed by a skilled statistician, would yield averages which would supply the standard demanded by the second question propounded at the beginning of this chapter. Finally, the statistics would render it possible to make comparisons between the rate of physical development in different classes of the population, and would thus help us to answer the first question.

That statistics of great value for comparison can be obtained by this method, is proved by the results of the observations made by Dr William Hall in elementary schools. He examined all the school children in different districts of Leeds, and in one country school, and classified his records according to age (see Appendix III.). At every age from 7 to 12 years inclusive, the average weight and height of the children at the schools which served a poor district were considerably below the weight and height of those in the schools serving a good district. His statistics also brought out the very interesting fact, that the children attending a Jews' school in a poor district exceeded in average weight the children attending a Gentile school in a good district, although the Jew was not on the average so tall as a Gentile child. A comparison between the poor Jew and the poor Gentile child was very much in favour of the former; at 8 years of age the poor Jew was 2 in. taller and 3 lbs. heavier; at 10 years of age it was 6¼ lbs. heavier and 2½ in. taller; at 12 years of age it was 7 lbs. heavier and 2¼ in. taller. Dr Hall attributes this superiority of the Jewish child partly to the better food and greater care which the mother enjoys before her child is born; partly to her inborn desire to suckle her infant; partly to her greater wisdom in feeding the child when artificial methods become necessary; and, finally, to the great love of the family and of the home characteristic of the Jewish race.

The statistics collected by Mr Seebohm Rowntree in York point to similar conclusions; and he shows that reliable comparisons can be made between the children in the three classes in which he divided them (poorest, middle, and highest class of labour). He found* that the average height and weight of boys and girls in the poorest section was, at all ages, less than that of the children in the highest class of labour, and that the middle class of labour held an intermediate position.

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* *Poverty: a Study of Town Life*, London, 1902, p. 211.

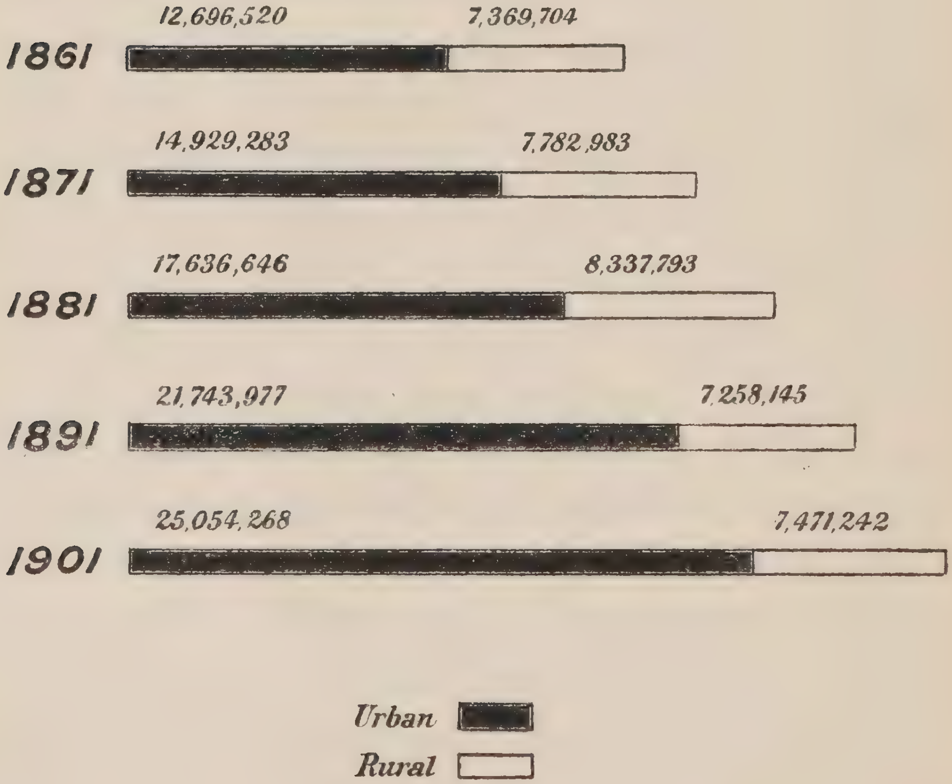
There is other statistical evidence of the injurious influence on the health of children from town conditions. It must be remembered that the increase in the population of England and Wales, which occurred in the decennial interval between the census of 1891 and that of 1901, was almost entirely confined to the towns. In 1891 the number of persons residing in rural districts was 7,258,145; in 1901 it was 7,471,242, an increase of less than a quarter of a million. The increase in the urban population within the same period was 3,310,291 (from 21,743,977 to 25,054,268). The evidence of vital statistics proves beyond cavil that the effect of town conditions is to cause premature death. The death-rate in rural England and Wales is notably less than in urban England and Wales. In 1900 it was as 17·5 to 19·5; in 1901 as 15·7 to 18·6. In 1902 the Registrar General added to his list of thirty-three large towns forty-three others, and, probably because many towns of comparatively small population were included, the contrast was rather less pronounced, 15·3 to 17·4.

The infantile mortality, a much more sensitive test of the public health, which is, at the same time, free from fallacies difficult to avoid in dealing with the total death-rate, reveals facts still more favourable to the rural districts.

The mortality among infants is given by the Registrar General in relation to the number of births registered. The table on page 40 shows the rates in recent years for the rural districts, for the smaller towns, for the great towns, and

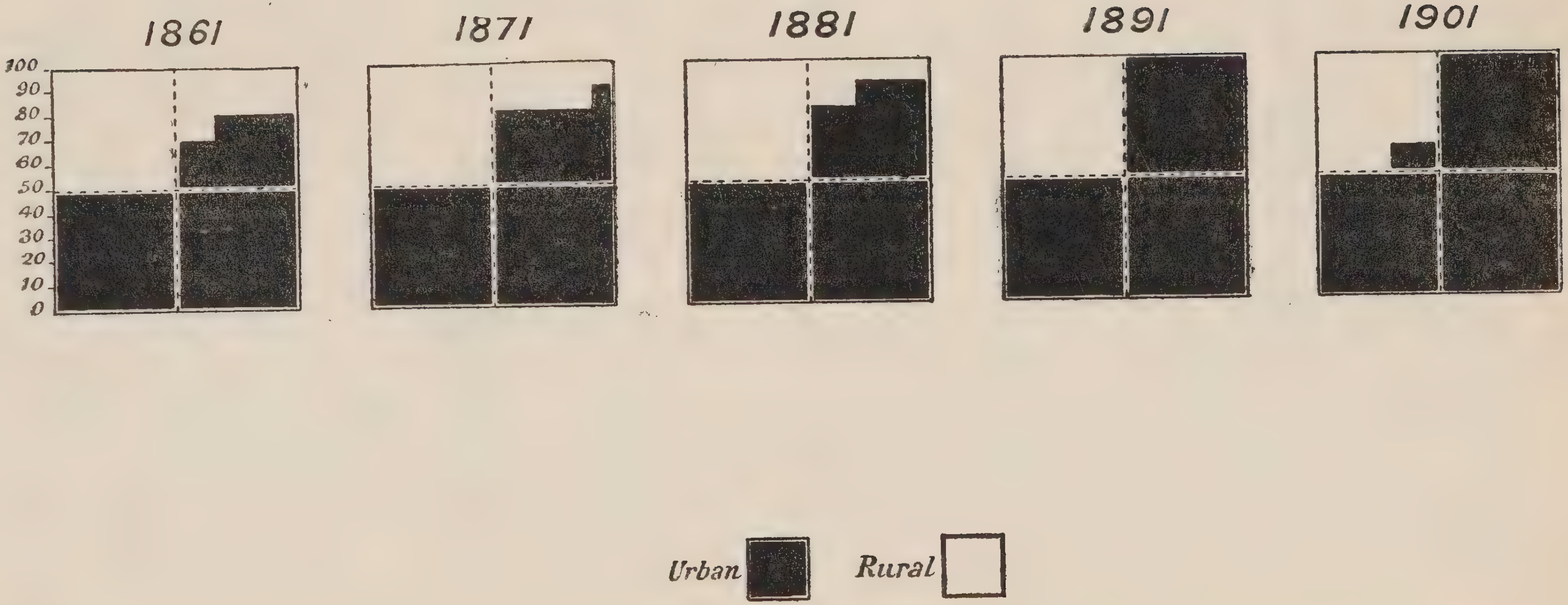
England and Wales.

Diagram to illustrate the relation of total Urban to total Rural population at the five censuses 1861-1901.



England and Wales.

Diagram showing increasing percentage of urban to total population at the five censuses 1861-1901.



for the whole of England and Wales; but owing to the change in the classification of towns, the figures for the first two years are not directly comparable with those for the later period. It is, however, safe to assume that the fall in the rate for the great towns to be observed in the year (1902), when forty-three additional towns were included in that category, is in part due to the fact that in some of them the general conditions approach those of the smaller towns and rural districts:—

INFANT MORTALITY.

Rates of infant mortality per 1000 *births in the whole of England and Wales, in the greater and smaller towns, and in rural districts.*

	1900.	1901.	1902.	1903.
England and Wales .	154	151	133	132
Great Towns . . .	172	165	145	144
Smaller Towns . .	166	163	135	135
Rural	138	138	119	118

The classification of towns was altered in 1902. Before that date the statistics referred to 33 great towns and 67 smaller towns; subsequently they refer to 76 great towns and 103 smaller towns.

For the reason mentioned, it is not safe to conclude that the decline in the infant mortality in large towns, shown by this table, really represents a corresponding improvement in the poorer quarters of such towns.

The following table compiled from one given in the Sixty-fourth Report of the Registrar

General (1901), shows the mortality of infants in the urban and rural counties respectively. The counties in the first class are those which are chiefly urban in character, and contain most of the industrial centres, while those in the second are exclusively rural or contain a few small towns, which, although technically styled urban, nevertheless partake of that character to a slight extent only :—

Infantile mortality under 1 *year of age per* 1000 *births* (1901).

	All Causes.		Diarrhœal Diseases.	
	Male.	Female.	Male.	Female.
England and Wales .	166	136	37	32
Urban Counties . .	180	149	43	38
Rural Counties . .	136	107	20	15

The next table, taken from the same source, shows that the excessive mortality among children in urban counties is not confined to the first year of life :—

Mortality among children 0-5 *years of age. Rate per* 1000 *living* (1901).

	All Causes.		Diarrhœal Diseases.	
	Male.	Female.	Male.	Female.
England and Wales .	58·90	49·37	11·14	9·40
Urban Counties . .	66·93	56·55	13·43	11·51
Rural Counties . .	42·83	33·97	5·49	4·14

It will be observed that in both tables the mortality among boys is greater than among girls, both in town and country. The causes of this difference, which is to be traced in the statistics of all countries, have never been fully ascertained, and need not be discussed here. It is sufficient for the present purpose that the figures prove that in either sex, in infancy and early childhood, the deaths are notably more numerous in urban than in rural populations.

The last table also throws some light on the cause of this higher mortality, inasmuch as it shows a marked contrast under the head of diarrhœal diseases, which, both among infants and children, are more than twice as fatal in town as in country.

Further evidence of the injurious influence of the conditions prevailing in large aggregations of population, is to be found in the comparison made in the Fifty-fourth Annual Report of the Registrar General (1891) of the infantile mortality in three towns (Preston, Leicester, and Blackburn, selected as usually presenting a high rate), in five mining or industrial counties (Staffordshire, Leicestershire, Lancashire, West Riding of Yorkshire, and Durham), and of three agricultural counties (Hertfordshire, Wiltshire, and Dorsetshire). The following table shows the conspicuous difference in respect of survival and death-rate between the towns and industrial districts on the one hand, and the rural counties on the other :—

Infantile mortality, 1889-91.

Age.	Of 100,000 born, the numbers surviving at each age.			Annual Death-rates per 1000 living in each successive interval of age.		
	Three Rural Counties.	Five Mining and Manufacturing Counties.	Three Selected Towns.	Three Rural Counties.	Five Mining and Manufacturing Counties.	Three Selected Towns.
At birth	100,000	100,000	100,000	213	331	382
3 months	94,820	92,051	90,874	75	154	240
6 ,,	93,068	88,574	85,574	61	128	180
12 ,,	91,283	83,081	78,197	...	...	...

It must, of course, be admitted that a part of the infantile mortality in all districts, urban or rural, is due to congenital defect or debility. Some infants are born only to die; the mortality in the first week is very high. How much of it is inevitable is a matter of conjecture, but there can be no doubt that the health and habits of the mother have a great influence in determining the degree of vigour of the child's constitution, and its power to resist disease; an underfed, overworked, or intemperate mother is less likely than a healthy steady woman to have a robust child. Again, a weakly infant which would certainly succumb during the first weeks if in careless or ignorant hands, may, by careful and intelligent management, be nursed through the perils of the first year, and eventually grow to the normal standard. The chance of survival is greatly increased if the infant receives its natural nourishment. This fact, which is universally acknowledged, and so appeals to common sense that it hardly needs proof, was strikingly illustrated during the siege of Paris when, though the general mortality was doubled, the deaths among infants fell 40 per cent. ; this was attributed to the fact that mothers were compelled to nurse their children owing to the impossibility of getting cow's milk. Although there are no statistics on the subject, observation leaves little doubt that the proportion of mothers who nurse their infants is greater in rural districts than in the great towns. This is to be attributed partly, perhaps, to custom, partly to the difficulty rural labourers' wives find in getting milk, owing to its nearly all being sent to towns, but mainly to the fact that they are not tempted to leave their homes to work in factories.

These statistics are evidence not only of a deplorable waste of child life, but also of a very much larger amount of acute illness, followed in many instances by ill-health. Remembering the after-consequences of, for example, scarlet fever and measles, the debility and malnutrition so frequently left by an attack of acute gastro-enteritis, will it be contended that the larger number of deaths in urban districts does not indicate a larger amount of illness interfering with development and causing unfitness; that is to say, individual deterioration?

The following table, founded on the returns of the Registrar General, shows the death-rate from the chief epidemic diseases at all ages, but the major part of their incidence is on the earlier ages:—

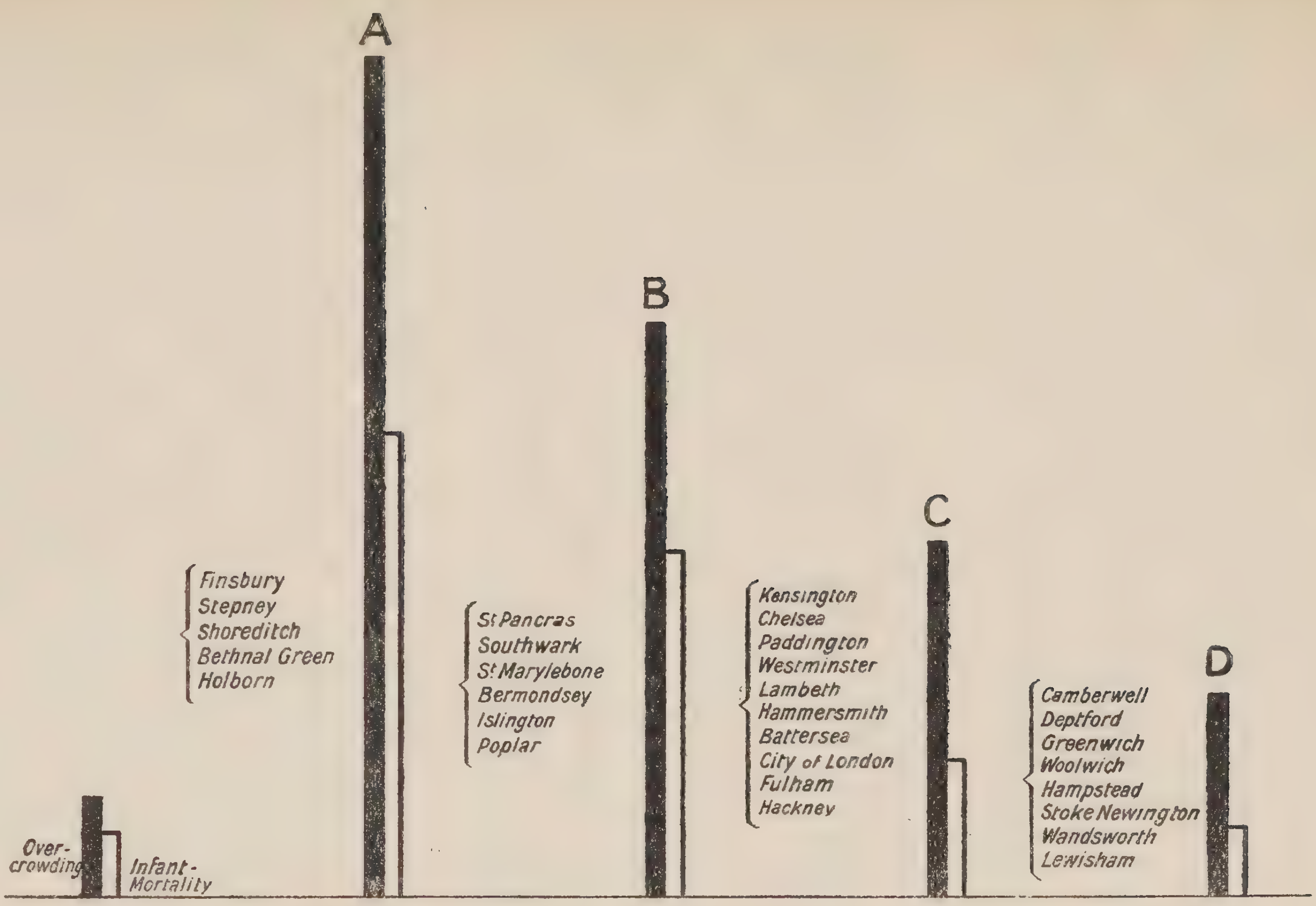
Death-rates from the chief Epidemic Diseases.

	1900.	1901.	1902.	1903.
England and Wales .	2·00	2·05	1·64	1·46
Great Towns . . .	2·50	2·68	2·12	1·89
Smaller Towns . .	2·75	2·24	1·53	1·41
Rural	1·57	1·55	1·14	1·18

The classification of towns was altered in 1902 (see above).

It is seen, therefore, from the evidence of vital statistics, that town conditions are, as compared with country, inimical to the survival of infants and young children. Surely no one will have the temerity to deny that this terrible toll of infant life means also a corresponding toll on the health of those infants who live on into childhood. We know that the diseases causing the greater part of this mortality are of a kind which produce a lasting effect on nutrition, impairing digestion, deforming the skeleton, and stunting growth generally. We know also that much of this mortality and disease is preventable, and as the king said on a memorable occasion, "If preventable, why not prevented?"

Some interesting facts confirming these conclusions are to be found, of all unlikely places, in the report of the Medical Officer for the County of London. They are contained in his comparison of the expectation of life at various ages in Hampstead and Southwark respectively. True, Hampstead is no longer a country village, but by its Heath and other natural advantages it approaches the rural standard, and, in so far as it is not truly rural, the contrast is the more convincing. In Southwark infants die in greater proportion than in Hampstead, of those who survive fewer reach school age, and fewer than in Hampstead survive school age into the working period Taking Hampstead as a standard, Southwark loses 13 per cent. of the period of infancy, 17·7 per cent. of the school age period, 20 per cent. of the working period, and 59·1 per cent. of the period of decline. The accompany-


A
B
C
D
Over-crowding
Infant-Mortality
Finsbury
Stepney
Shoreditch
Bethnal Green
Holborn
St Pancras
Southwark
St Marylebone
Bermondsey
Islington
Poplar
Kensington
Chelsea
Paddington
Westminster
Lambeth
Hammersmith
Battersea
City of London
Fulham
Hackney
Camberwell
Deptford
Greenwich
Woolwich
Hampstead
Stoke Newington
Wandsworth
Lewisham

ing diagram shows the ratio of infant mortality to overcrowding in Metropolitan boroughs, grouped according to the degree of overcrowding. It will be seen that the mortality and overcrowding decrease together.

In an article on Gymnastics in the *Encyclopædia Britannica* the following observation occurs :—*

> "Without entering into details, it may be admitted that the physical condition of the people, if not actually deteriorating, is not improving, and it is a significant fact that within the last year or two it has been found necessary to lower the standard in the British Army, and that Dr Ord, in his report for 1869, states that out of 5567 boys 4410 were rejected as under the standard of width of chest and height."

If so large a proportion of boys was rejected in 1869, and if in spite of the fact that the standard has been lowered, three out of every five recruits are, at the present day, found unfit within two years, does it not follow that progressive deterioration is going on?

The general conclusion from the evidence summarised in preceding chapters is, that whereas there may be room for doubting whether there is any proof of progressive deterioration—any proof, that is, that the youths of the present generation are physically inferior to those of the past—there is no clear evidence of improvement, and no escape from the conclusion that the proportion of lads and youths physically unfit is alarming. If this be true of the lads, is there any ground for hoping that the physical condition of their sisters is better? They are exposed to exactly the same injurious conditions, often in an aggravated form, and there can be no doubt that their physical development suffers to at least an equal extent.

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* *Encyclopædia Britannica,* vol. xi., Article "Gymnastics."

Such facts deserve the most anxious attention of the whole nation, but especially of all persons interested in education, whether as members of local education authorities, managers of schools, or teachers. As Lord Rosebery has said, "An Empire is but little use without an Imperial race." We need men physically fit, not only to defend the empire in time of need, but to enable us to hold our own in that commercial struggle between the nations which in recent years has become so acute, and which is not likely to grow less severe in the future. And we need women to be the healthy mothers of robust children.

Before attempting to discuss the means which can be taken to diminish the amount of physical unfitness among the labouring classes, it will be desirable to consider the causes to be held responsible for bringing about results deplored by everyone.

Two circumstances immediately present themselves as demanding investigation. The one is the effect on the national physique of the enormous increase in the proportion of the population now resident in towns; and the other, the influence of universal compulsory education on the physical development of children.

It can hardly be necessary to prove that, without extreme care to neutralise influences obviously injurious to the growth of a sound mind in a healthy body, the conditions of life in towns must produce deterioration of the individual child. The richer classes recognise that even under the most favourable circumstances, in homes where everything that the most anxious thought and unstinted expenditure can provide, it is not well to keep children continuously in towns. The annual holiday is now in these classes very generally supplemented by the country cottage, and the boys, at least, are usually sent to boarding schools in the country. The children of the labouring classes do not enjoy these advantages; at best, with good luck, they may escape from the long unlovely streets for a fortnight in the year, while among the very poorest who live in the most crowded tenements in the worst districts, those are fortunate who can spend even one day in fresh air, among country sights and sounds—a day of days in their lives, which will enable them to understand the descriptions they may read in books of country joys.

If, then, we have to admit that town influences are injurious, we must admit also that they are affecting a larger proportion of the population. The ratio of town to country residents, which was 212 to 100 in 1881, and 258 to 100 in 1891, was found at the last census (1901) to have risen to 335 to 100. It has been proved beyond doubt that the influx of the rural populations into towns is increasing at an enormous rate; it has been equally proved that the death-rate, especially the infantile mortality, is much larger, proportionately, in towns than in the country. It is admitted that a large number of those infants not swept away by death, survive severely maimed and damaged from diseases generated by ignorant feeding, mismanagement, overcrowding, and other insanitary conditions. It follows of necessity that there is increasing physical deterioration of the population as a whole, although, to the shame of those responsible, there are no statistics to prove it in black and white.

The influence of compulsory education is more difficult to estimate. In many respects it is good, in certain others it would appear to be injurious.

The Anthropometrical Committee of the British Association was unable to present any evidence as to whether there was progressive degeneration in the industrial population, but it referred to certain statistics collected by the Factory Commissioners of 1833, and compared them with similar statistics obtained by the Local Government Board in 1873. They appeared to show a slight increase of stature, and a larger increase in weight. The introduction of compulsory education in 1871 has, however, so altered the conditions of child life, that no reliance can be placed on statistics collected before that date to throw light on existing circumstances. Broadly speaking, the answer to the question whether, in respect to physical development, the good or evil prevails, depends on the degree of wisdom and public spirit shown by the local educational authorities. Overcrowded, ill-ventilated, ill-lighted schools; want of a well-organised system of instruction in physical exercises, cookery and domestic hygiene; and inadequate playgrounds, can only aggravate other injurious influences which the town child has to encounter. Well-constructed school buildings, intelligent teaching in drill and gymnastics, and open-air games, on the other hand, must tend to healthy growth, and help to make up to the town child for the loss of the free life enjoyed by the country child.

CHAPTER IV

OVERCROWDING IN TOWNS

"Air, air, fresh life blood,
Thin and searching air!"
ROBERT BROWNING.

What is Overcrowding? Overcrowding of Bedrooms. Insanitary Slums and Gloomy Streets. Garden Cities and City Gardens.

AMONG the many causes leading to the deterioration of physique among the labouring classes, overcrowding must be ranked as one of the principal. Overcrowding has been chiefly caused by the movement of the rural classes to towns. Year by year the steady stream of agriculturalists flows towards manufacturing towns, so that whereas in 1851, out of a total population in England and Wales of 17,927,609 souls, 8,990,809 were urban; in the present day the urban number 25,000,000 out of a total of 32,527,843.

Thus in fifty-two years 27 per cent. of the rural population has migrated to towns, making the urban 77 per cent. of the entire population. In Scotland much the same thing has happened, 75·3 per cent. of the population being urban.

The definition of overcrowding, given in the Registrar General's reports, is an average number of more than two persons in a room. Another test of overcrowding is the density of population to the acre. The late Sir Benjamin Ward Richardson asserted that no city could really be healthy which contained more than 25 persons to the acre. Mr Seebohm Rowntree, in his valuable book, *Poverty: a Study of Town Life*, states that there are 349 persons per acre in Skeldergate, York; while, at the 1891 census, in the Bethnal Green district in London, there were 365 per acre. At the same census Glasgow had a percentage of 59·0 persons living more than two in a room. It is estimated that some 3,250,000 persons in the British Isles live in overcrowded dwellings, with an average of three persons in each room. According to the standard work of Notter and Firth, *The Theory and Practice of Hygiene*, the amount of fresh air to be supplied in health during repose ought to be :—

For adult males	3600	c. ft. per head	per hr.	=	102	c. metres.
For adult females	3000	„	„	=	85	„
For adult children	2000	„	„	=	57	„
For a mixed community . .	3000	„	„	=	85	„

"A change equal to three times per hour," they add, "is generally all that can be borne under the conditions of warming in this country, or that is practically attainable with natural ventilation, and if this be correct, from 1000 to 1200 cubic feet should be the minimum allowance for initial air space." And they continue, "The amount of cubic space thus assigned for healthy persons is far more than most people are able to have; in the crowded rooms of the artisan class, the average entire space would probably be more often 200 to 250 cubic feet per head than 1000." It is estimated that in average-sized rooms the cubic feet of air space is sufficient for two people; as in most houses only half the rooms are bedrooms, it follows that during the night the actual number in each room must exceed four, and that if we accept Mr Rowntree's estimate of 1200 cubic feet as the average cubic space of an ordinary room, then the air space at most is less than 300 cubic feet a head. Mr Rowntree caused an examination to be made of 2480 houses in York on the night of September 12, 1900, between 11 P.M. and 2 A.M., with a view to seeing in what measure ventilation counteracted the evil effects of overcrowding. The following was the result of the investigation:—

Character of Houses.	Number of Houses examined.	Number with Open Windows.	Percentage with Open Windows.
Class 1 (highest) . .	486	48	10
Class 2 (middle) . .	704	37	5
Class 3 (poorest) . .	1290	39	3
Total . .	2480	124	5

It will be seen that in the lowest classes, with the smallest rooms and probably the dirtiest and most overcrowded conditions, the percentage with open windows is by far the smallest. As Mr Rowntree justly remarks, this points to the great necessity of instruction regarding the value of fresh air among those living in the poorest districts.

Houses, back to back, with no possibility of through ventilation, are a source of danger. Mr Rowntree tells us that in York, where only 6·4 per cent. of the inhabitants are overcrowded, 20 per cent. of the houses have not separate sanitary conveniences, and among 228 houses there are only 33. Four hundred and forty-two houses have between them 30 water-taps, while 19 per cent. of the houses have no separate water supply. We read: "In some cases the tap which supplies the drinking water is fixed in the wall of the water-closet. Pantries and water-closets are sometimes separated by a wall only one brick in thickness. Many of the ashpits are overflowing, and heaps of all kinds of rubbish are distributed promiscuously over the yard or court. . . . A number of slaughter-houses situated in the midst of the slum districts form another unsatisfactory feature. . . . They have dirty windows, broken panes are frequently stuffed with rags or pasted over with brown paper, and a general appearance of dilapidation and carelessness, reveals the condition and character of the tenants."

This vivid picture of squalor and insanitation is, unfortunately, not peculiar to York, and we may take it as being typical of existing conditions in the slums of every large town in Great Britain, since the crowding caused by the migration of the country population towards towns. The sanitary authorities are greatly to be blamed for allowing this filthy state of things to exist, and no amount of theoretical instruction in hygiene will impress the people, when they see tins of decaying refuse allowed (with the knowledge of the sanitary inspectors) to stand for hours in the broiling sun, sowing the seeds of disease and fouling the small amount of air which enters the dwellings of the people. Every dust-bin should be cleared by 8 every morning, and the scavengers should sprinkle each one with carbolic disinfectant. Decaying rubbish attracts flies, and as a carrier of disease-germs it is well known that the fly plays a considerable part. The *Hospital* writes: "The *Musca Domestica,* as it is called by science, is a foul feeder, and it is not pleasant to think that the insect alighting on our food may previously have been creeping over the scavenger's heap. Its leg is covered with fine hairs, and has a sucker foot, which is the best thing in the world for conveying dirt from one place to another."

Can anything be more gloomy and wretched looking than our English system of laying out towns, with rows of small badly-built houses, separated only by narrow streets, devoid of trees, and perhaps miles from any open space or park? With the facilities afforded by trains and tramways it should be easy to spread out this mass of humanity, and give it at any rate breathing space. The curse of overcrowding alone accounts for much of the physical and moral ill-health of the nation. The verdict of the Housing Commission, some years ago, was that "the general deterioration in the health of the people is a worse feature of overcrowding even, than the encouragement by it of infectious disease. It has the effect of reducing their stamina, and thus producing consumption and diseases arising from general debility of the system, whereby life is shortened." It is, unfortunately, a fact that overcrowding and poverty go hand in hand. In York, 94 per cent. of the overcrowded families were found to be in either "primary" or "secondary" poverty.

Mrs Greenwood, chief lady inspector, Medical Officer's Department, Sheffield, speaking at a public conference on the infantile death-rate, giving statistics dated 1901, stated that where 25 women suckled their children, 200 fed them with the bottle. She had often found that babies were given every kind of food with a view to developing their natural tastes. The remedy suggested by her was the education in sanitary science of the children. She expressed the belief that the accumulation of filth round many dwelling-houses, with the overcrowded state of the courts, and the consequent habits of the inhabitants, largely contributed to the enormous infantile mortality. Besides filth, there was the horror in which the masses of the uneducated held fresh air to contend with. No one visiting the slums could fail to be impressed by the mal-formed, stunted, rickety children—the innocent victims of bad air and improper feeding. Out of the children, under two years, who had died during the summer of the previous year of diarrhœa, death in 21 per cent. resulted from the inexperience or ignorance of the mothers. Working-class women were steeped in ignorance and superstition, and required teaching. Great aid might be given by the authorities. If public authorities, magistrates, and officials generally expected the people to be clean, she thought they would be. At the same conference, Mr Frank Tillyard maintained that much of the infantile mortality was due to the low level of wifehood, consequent upon the ruin which many women underwent while they were in manufactories. They too often had not the moral, intellectual, or material means of keeping their children alive.

The following paragraph which appeared in the *Globe* of 13th January 1904, and which has to do with a case of overlaying, exactly describes the conditions of ignorance, owing to unsuitable education in domestic subjects, under which most girls become heads of homes and mothers of children :—

> "A lot of young women marry," said the West Middlesex coroner yesterday, "who are unfit to take care of a kitten or canary. These are the sort of young women who put the kitten in the cage, the canary on the hearth-rug, and, after throwing the baby down the sink, dry the bath, and tuck it snugly up in the cradle."

A smattering of grammar and geography and such subjects will not fit girls to become mothers, and until education in domestic subjects is ranked first, and treated as of the first importance, it is needless to expect young women to be born cooks, mothers, and housekeepers.

We have seen that overcrowding with its accompanying evils destroys the health and causes physical weakness and debility. Its moral effect is equally bad. How can conditions of morality and modesty be kept up in homes where men, women, and growing-up boys and girls are herded together in perhaps one or two rooms? The unhealthy body tends to produce the unhealthy mind, and overcrowding is responsible for many a man or woman who turns out badly. In London alone 400,000 people live in single-room tenements, 40,000 live 5 in a room, and 8000 live 7 in a room; and a case was mentioned by a high authority where 5 families inhabited a single room—1 in each corner and 1 in the centre!

In order to raise the national physique, it will be necessary to produce boys and girls possessed of sound bodies and minds, and until the children of the poor are raised out of the gutters and slums, their mental and physical health will continue to fail. The objects of the Garden City Association, or any other association which seeks to encourage townspeople to move to healthier surroundings, cannot be too highly commended. But the two main difficulties which will have to be faced, if such schemes are to be attended with success, are first, the fact that few town-bred persons, or even persons having left the country to dwell in town and having tasted town excitement, will settle down happily to what they consider the ordinary dull routine of country life. In such a city the customary recreation and amusements of a town must be provided, such as libraries, recreation rooms, a theatre or even a music hall, and playing fields, parks, and boulevards. In the purchase of a site and the laying out of it, these essentials of a healthy city should be constantly borne in mind.

The second point is that to provide a sort of suburb in order to induce people, at present overcrowded in London, to move to healthier surroundings, is manifestly impracticable; work by which they can earn their daily bread must be provided for them in those fresh surroundings. The successful experiment of Messrs Cadbury, near Birmingham, might well serve as a model; the factory is, as it were, its centre, the dwelling-houses are near at hand, and every ordinary means of recreation and instruction to be found in a small town have been provided. Sir John Gorst, who visited the place recently, said that he was struck with the healthy appearance of the children, and reflected how different would have been their condition had they been brought up in the Birmingham gutters. Mr T. C. Horsfall, J.P., in an interesting address, at the Jubilee Conference of the Manchester and Salford Sanitary Association, on the housing question, argued that the only way to put an end to existing overcrowding of areas by too many houses and too narrow streets, was to give power to the local authority in each area to prepare plans for the whole town and for a wide band of country round the town, and building regulations for the same area; plans which must be complied with by all who built on new sites or altered buildings on sites already occupied, plans giving streets, all wide, and some very wide, and planted with trees, and abundance of open spaces; building regulations, to be observed in all new structures and in the alteration of all old ones, providing for an adequate supply of air and light to every part which is meant to be inhabited of every building. Mr Horsfall gives as an example of the successful working of this plan, Frankfurt-am-Main in Germany. Ten years ago, the Mayor seeing that manufactures in the town were greatly increasing, induced the Town Council and the hospitals connected with the town to buy up a large amount of land. During the last few years there has been an enormous demand for workmen's dwellings in Frankfurt. The Town Council sell the land for terms of eighty years, promising at the expiration of the term to pay one quarter of the value of the buildings placed on the land. Further, as the land and the houses built on it will become the property of the town, the Council is willing to lend those, who in building comply with their regulations, nine-tenths of the cost of the building. The regulations require that every block of houses shall have gardens. Mr Horsfall contends that if a competent mayor were allowed to stay in office for a number of years and the German system adopted here, we should have an authority which could safely be entrusted by the Legislature with power to incorporate suburban districts, with the power to buy large quantities of land round the town at reasonable prices, with the power of making plans for a zone of land round the town several miles wide, and with the power to provide tramways. He could also enter into arrangements with railway companies for cheap train services and the construction of additional short lines. The full use of all those powers by a local authority is necessary for the solution of the housing problem.

CHAPTER V

THE MOTHERS OF THE NATION

"A sufficient measure of civilisation is the influence of good women."

EMERSON.

Poverty in the Child-bearing Period of Life. The need for Rest. The Up-bringing of Infants and Young Children.

THE dire effects of overcrowding and poverty begin to affect the child before it is born, for the health of the mother must react on that of her child. Constantly living in vitiated air, probably working up to the last day before her confinement, or, if not, cooped up in an insanitary house, with the alternative of going out to wander about, for exercise, in narrow treeless streets, so thickly lined with houses that the air there is not very much better than indoors—the effect on her spirits must be depressing; too often she suffers also from insufficient and possibly unnourishing food, and has nights of unrefreshing sleep. Such, under ordinary conditions, is the life led by the average workman's wife while she is bearing children. Before the children arrive, and after they are old enough to earn money to support themselves, or even contribute some of their earnings to their parents, the parents are not pinched, but as Mr Rowntree points out, the time during which labouring couples are rearing children is just the time when they are poorest. A couple marry: they are comparatively comfortably off; then children are born, and require food, clothes, education, medicine. Then it is that the mothers suffer, just at the time when they themselves require extra food and comfort, in order that they should bear healthy infants and be robust enough to suckle them.

In this country it is now illegal for a mother to return to work within one month of her confinement; but, as Dr George Reid has pointed out, "it is hardly likely that she will commence suckling her child if she intends to engage in work again after so short a period." He suggests that the time should be extended to three months, as he thinks it probable that the mother, in most cases, would then suckle her child until she returned to work, and thus the most precarious period in the life of the child would be tided over, and the chances of subsequent survival would be considerably increased.

More than this, however, is desirable, although it is not so easily accomplished. Mothers who, at the end of the three-months period, elect to return to work, should be required to show that satisfactory provision has been made for the care of their infants. Under existing circumstances, this can only be effected by the establishment of crêches by local authorities, and to allow of this an enabling (adoptive, if need be) Act should be passed. Such institutions might be made almost self-supporting, for a sufficient charge to cover all expenses would be made in the case of those parents whose joint earnings allowed of its payment.

It can hardly be necessary to insist upon the reasons why it is harmful for mothers to leave home to work during the infancy and helpless period of childhood of their offspring. The chief of these is, that mothers who would otherwise suckle their infants are prevented from doing so. Many are glad of the excuse, and those who are willing are unable to. In some parts of France mothers go home once a day to suckle their infants, and in Spain the law exacts that every employer allow an hour (which can be divided into two absences) to nursing mothers. The drawbacks to this plan are, first, that the women are probably tired and hurried, so that the milk may disagree; and, secondly, that it would probably be necessary to supplement the natural supply by artificial feeding.

It is noteworthy that those married women who have to go out to work, very often have spendthrift, unsteady husbands who take advantage of the earnings of the wife, to spend upon themselves in drink or gambling the money they ought to contribute to the support of the household. Most civilised countries have provisions forbidding women to work for a period after childbirth. In Belgium, Holland, Germany, and Austria the period is four weeks, and in Germany it is extended to six weeks, unless a medical certificate can be produced approving employment at the end of four weeks. In Spain the period is three weeks. In Denmark the period is four weeks, but a woman may return to work earlier if she can produce a medical certificate to the effect that the employment will not be injurious to herself or the child.*

But regard should also be had to the circumstances of the mother before her confinement. In Switzerland this is recognised, and by a federal law of 1877, "a total absence from employment in factories of women during eight weeks before and after childbirth must be observed, and on their return to work proof must be tendered of an absence since birth of the child of at least six weeks." An order of the Federal Council prescribes a further absence from employment before confinement for an unstated period in respect to certain dangerous occupations. A provision similar to that in force in Switzerland should be introduced in this country, and women should not be allowed to engage in such work as is done in laundries and factories, or to work as charwomen for some two or three months before the time the child is expected to be born.

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* *Dangerous Trades.* Edited by Thomas Oliver, M.A., M.D. London: John Murray, 1902.

In view of the heavy infantile mortality from gastro-intestinal disorders, caused by artificial and improper feeding, and of the undermined constitutions of those children who survive, a time will come when those interested in the national physique will recognise that money laid out on the care of mothers bearing children among the labouring classes would be money wisely spent.

Dr George Reid, Medical Officer to the Staffordshire County Council, has made a special study of the effect on infantile mortality of the mothers going to work. He divided the towns in the county into three groups: (1) those in which there were many married women workers;

(2) those in which there were a good number of married women workers; and (3) those in which there were practically no women workers. The following is his summary of the statistics :—*

Deaths in children under 1 *year per* 1000 *births in three classes of artisan towns in Staffordshire.*

	Class I. Many Women engaged in work.	Class II. Fewer Women engaged in work.	Class III. Practically no Women engaged in work.
10 years (1881-90) . .	195	166	152
10 years (1891-1900) .	211	177	167

The figures, as he observes, speak for themselves, and it will be noticed that while there was a general increase in the infant death-rate, practically the same relative proportion was maintained between the three groups of towns.

Working women should be enabled to have a period of rest before and after their confinements, and if possible to stay at home and look after their children during the time they are dependent upon them. They should be advised by doctors how to feed and manage their infants, and when it is possible they should be encouraged to suckle them. Clear and stringent instructions should be given to them as to how to take care of themselves during pregnancy and lactation, and the danger of improper feeding of their babies should be impressed upon them. Thus will they turn out useful members of society for the nation. Were this done, much of what is now spent on the maintenance of hospitals, infirmaries, and lunatic asylums would be saved to the State. As a rule, the babies of mothers who have to go out to work are handed over to be minded by some woman who has not to leave home. A weekly sum is paid, so that if the woman is unscrupulous, she tries to make the most she can out of the transaction, and oftener than not the infant is half starved and neglected. An alternative is putting babies for the day in a crêche. There they are properly looked after, but there is the risk of infection from the other children, the risk of cold in carrying them backwards and forwards morning and evening in all weathers, and there is the different feeding they get at night in their homes. What mother can get attached to a child she only sees on Sundays, and that probably disturbs her sleep at night? All this tends to loosen instead of to strengthen the ties between mothers and children of the working poor. The children grow up without any home influence and often go to the bad in consequence, while the mothers often suffer want on account of their families, without feeling the strong links of affection which makes personal sacrifice a happiness.

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* *Dangerous Trades*, p. 87. Edited by Thomas Oliver, M.A., M.D. London: John Murray, 1902.

Of course, there are many mothers of the poorer classes who do not go out to work, and who have a better chance of leading a natural life and of bringing up healthy children. The characters of the women vary in a marked degree. It comes as natural to one to be a good housekeeper with a neat, tidy home, and to be a good mother, as it does to another to squander money on drink and neglect her children.

It would be impossible to over-rate the importance of the feeding of an infant for the first two years. It is the most vitally important period of a human being's life. Born healthy, a baby can generally be kept in health by clean, sensible feeding. The mother's breast is its natural food, and a child will thrive best on that, provided the woman is strong; this fact should be impressed upon mothers. Professor Budin, whose authority on the subject is indisputable, states that in his experience when artificial feeding has to be resorted to, the risk to the infant is very great, and he urges that women should suckle their babies for the first three or four months, after which period the risk diminishes. When through any circumstance suckling is impossible, artificial feeding must be resorted to. Cow's milk is the best available substitute for human milk. The difficulty is to get it clean and free from contamination. This seems next to impossible under the existing state of milk production even for the rich, but by the time it reaches the poor and has passed through endless channels of infection, milk may be considered as little short of poisonous. It is useless to undertake to solve a question without going to the root of it, and the root of the national unfitness is in the health of the mothers during pregnancy, and the feeding of infants during their earliest years. Until women lead healthier lives during pregnancy, and until there is a plentiful supply of pure, clean milk for infants that cannot be suckled, as well as for small children after weaning, they will grow into puny, sickly, rickety human beings who will never recover their false start in life. Until farms are inspected, and the public ascertain for themselves the conditions under which milk is produced, it is almost hopeless to expect any permanent improvement in the physique of the children of the labouring classes. It is hardly too much to say that they are better without milk in the poisonous state in which it reaches them. Perhaps it is not to be wondered at that mothers prefer to feed them upon patent foods, cabbage, pickles, fried fish, and so on. From earliest infancy they get bits of the same food that their parents are eating. The result of this is ruined digestions, and, as a consequence, bad teeth. It is a fact that even children's first teeth decay soon after they appear, and from growing beside these bad teeth the second teeth decay too; so that generally among the urban poor, teeth are decayed while the children are still in their teens. They are not made to brush them, nor are they taken to a dentist until the mischief is very advanced. A boy's career may be ruined by this one defect, as will be seen by referring to the number of recruits rejected owing to bad teeth. This alone points to the importance of proper feeding in infancy. Under the existing system of the milk supply, town children—when their parents give it to them—must submit to drink an impure fluid generally out of poisonous long-tube bottles, while, it is a fact, that it is often impossible to get even dirty milk for country children, most of it being sent away to supply the towns. It is proposed to form country depôts where milk from farms, within a certain radius, shall be collected and cooled and then sent (always reserving a certain proportion for the babies in the country) direct to towns, where it would be received in depôts, and sold direct to mothers for their children. The depôts should be connected with, and under the supervision of hospitals, when possible; by this system the infants could be weighed periodically to test their development, while their feeding could be supervised by medical men. This would save all necessity of milk passing through factories and retail shops, and would prevent much of the adulteration and uncleanliness which goes on under the present system. The middlemen's profits would also be saved, and good, clean milk could be sold in sets of bottles ready for the consumption of the infant. All this, which is worked on such an excellent system in France and other countries, at a profit to the depôts, will be discussed more fully in a later chapter, but some reference to it was necessary here, because the proper feeding of infants lies at the root of the question of the prevention of the physical deterioration which threatens the empire. Energetic measures to remedy the existing deplorable state of affairs are needed, and first among these is the systematic inspection of farms. The farmers ought to be the first to realise that, to maintain good sanitary conditions in their cowsheds and dairies, is very little dearer or more laborious, than to persist in the insanitary methods tolerated at present. Sir Frederick Maurice, in his valuable article in the *Contemporary Review* on the National Physique, says: "Now whether of the children sent from the towns into the country districts, either of soldiers or civilians, or of the children sent into hospitals, one hears the same story from those who have to look after them. The children have been so unaccustomed to the wholesome nutritious food suited to their time of life that they cannot eat it. They want what they have been accustomed to, what they call relishes—red-herrings, pickles, fried fish, and the like."

CHAPTER VI

COMPULSORY EDUCATION

"To prepare us for complete living is the function which education has to discharge; and the only rational mode of judging of an educational course is to judge in what degree it discharges such function." HERBERT SPENCER.

The Discipline of School Life. The Abuse of Corporal Punishment. Ventilation of Schools. Long Hours without breaks for Recreation. Risks of Infection. Cleanliness of the Person. Dress.

IN endeavouring to discover whether the labouring classes are physically less fit than they were, the question of education plays a very important part—What effect has thirty years of compulsory education had upon the parents of the children who attend the Board Schools, and upon the children themselves? Morally, no doubt, they must be benefited in a marked degree. Removed generally from squalid surroundings, where their time was spent between a miserable home (where they were, perhaps, hard-worked or sent out to work) and the gutter, into conditions of cleanliness and method, with plenty of occupation for the greater part of the day: who can doubt the great moral benefit of compulsory education to the children of the labouring classes? It is a fact that they themselves like and look forward to going to school, and nearly all the non-attendances may be traced to the parents, who try to keep them at home to work for them. As in school-children of all classes, there must be a certain percentage of born idlers and incorrigibles, whose one aim in life it is to dodge school. But, as a rule, boys and girls, once their intelligent interest has been aroused, are keen to learn, and, given the brain to understand what they are being taught, and the health to stand the long hours of enforced confinement and strain upon their minds, they really enjoy their lessons, and usually look back upon their school days as the happiest of their lives.

As good discipline increases in the schools the necessity for punishments should grow less. Corporal punishment only serves to harden children and to brutalise them, and as in a great assemblage of teachers all cannot be tender-hearted and discriminating, it may be taken that the habit of corporal punishment is often abused. For insubordination it may sometimes be necessary to smack a child, but this is a grave mistake in the case of stupidity at lessons. A child is often punished when it has done its very best and has only failed through stupidity or mental incapacity, and the fear of a beating will often drive all the intelligence out of it. There is the fear of beatings being administered as a vent to temper, and there is something revolting in the idea of this assertion of brute force by those who should be intellectually above losing their self-control. Corporal punishment is generally administered in the teacher's room, which is also unwise. The details of the murder of a boy of 13 by a head teacher of a "Realschule" at Barmen last June, are herewith given as reported in the *Daily Telegraph* of Wednesday, 13th January. Slow torture would hardly be adequate punishment for this fiend in human form, but the crime will have the effect of rousing the indignation of the civilised world and may do much to check corporal punishment.

This is the case:—

"Karl Deditius, 59 years old, a Lieutenant of Reserves and head teacher of a "Realschule" at Barmen, is charged with having so mercilessly and systematically punished Walter Busch, the 13-year old son of a farmer, that the boy was blinded and paralysed, and finally died. Deditius had the reputation of being a strict disciplinarian, and had been repeatedly warned by his superiors to cultivate moderation. It seems to have been his custom to cuff the pupils in the neck, driving their heads against the wall, and boxing their ears with his clenched fist. One day last January, because young Busch had written his arithmetic exercise upon the blackboard obliquely, instead of in a straight line, Deditius seized him by the throat, banged his head against the wall, and then sent him spinning across the class-room to the opposite wall with a punch in the ear. During the recess the boy complained of severe headache. Next day he appeared with a blanched face, and during the gymnastic exercises, was seized with a fainting fit. His playmates carried him to the home of his married sister, where it was discovered that he could not stand, his left side having become lame. He was put to bed, and subsequently began to suffer agonising spells of dizziness. These were followed by attacks of brain fever and partial, then total, blindness. Death relieved the youngster of his sufferings on 3rd June, but a few days before, Walter made a full statement to his father, outlining the systematic cruelties he had suffered at Deditius's hands, which he said he wanted to confess in order that his comrades might escape similar tortures."

The question of the effect of long hours upon their health and brain is of great import when the question of national deterioration is faced. While recognising the immense general benefit of compulsory education, given children in robust health, and given also a perfect system of mental and bodily training, we have to look at the reverse side of the medal. Those 60,000 children of whom Sir William Anson spoke as being physically inferior, and therefore unable to get the benefit of teaching in the schools; and the imperfections in the system of mental and physical education must be remembered. Some of the questions which have to be faced are: (1) the ventilation of schools; (2) long hours without breaks for recreation; (3) insufficient food for the amount of work done in school; (4) risks of infection; (5) effects of games, drill, gymnastics, etc., on children of that class.

Ventilation.

The ventilation of school-rooms in schools under the London School Board is under the personal control of the teachers: the School Board supply doors and windows. A teacher may be a believer in fresh air, then he opens the windows of his class-room. Those in the next room may possibly be kept hermetically sealed because the teacher fears draughts or feels the cold. Where there is a headmaster or mistress very keen on hygiene, they may, by extreme watchfulness, insist upon the various school-rooms being properly ventilated, but in a body of teachers numbering some 20,000 it is obvious that great difficulties must be encountered. The unsoundness of this state need not be insisted upon.

A system of ventilation should be carefully thought out and applied in every school. Care would, of course, be taken that no risks to health should be incurred by violent draughts. But by windows or louvres high up near the ceiling (possibly with a grating) continually open, and by others lower down which should be always open in summer and in winter, raised or lowered according to the temperature and the direction of the wind, a comparatively fresh atmosphere could be obtained. In America a system of ventilation by stoves, quite independent of ventilation by doors and windows, is employed. Professor Matthew Hay, M.O.H., of Aberdeen, in his evidence before the Royal Commission on Physical Training in Scotland, stated that at the instigation of the School Board in Aberdeen, mechanical ventilation in schools was employed. The air is carried by fans by a propulsive system. This is more expensive than so-called natural ventilation, and it would be difficult to carry out in existing buildings. Dr Hay was of opinion that although the results were not ideal, a mechanical system of ventilation gives distinctly better results in the purity of the atmosphere than natural.

Dr J. Kerr has expressed it as his opinion that, quite apart from door and window, nearly every school requires ventilation either by stoves or by some other appliances. When it is borne in mind that to have a fairly pure respiratory air every man should have 800 cubic ft. of space to himself, and that a child should have 2000 cubic ft. of fresh air per hour, it will easily be conceived that under the present system the children's health must suffer terribly.

The very first step towards reform is the compulsory learning of hygiene, by teachers, in order that they, in their turn, may be capable of teaching it to all the children in our elementary schools. They will then understand the use of fresh air in their school-rooms. The least that can be expected of School Inspectors is, that they should be sufficiently aware of the importance of hygiene, to insist upon the children doing their lessons in healthy surroundings. Mr Horsfall, at the Jubilee Conference of the Manchester and Salford Sanitary Association of 1902 (in connection with sanitary reform), speaking on the importance of there being the best possible kind of influence passing from the local educational authorities to our schools, gave, as an example of the terrible dangerous ignorance of the people who now rule our school system, the following instance: "In an elementary school" (of which he was one of the governors) "I have seen one of His Majesty's Inspectors on the occasion of an annual inspection order the closing of all the windows, when the windows were the only means of providing ventilation." When it is urged that there are already too many subjects crowded into the school time-tables, every intelligent person, having at heart the health of the nation, will see that even if half the school time had to be devoted to the study of hygiene, it would be time well employed, for, only by training the present generation in the laws of hygiene, will our national health be assured in coming generations. Dr Kerr, Medical Officer of the London School Board, in his report, emphasises the fact that anæmia and debility, contributed by school conditions, exist from neglect of efficient ventilation. On the children attending schools should all efforts be concentrated, for it may be taken for granted that parents now steeped in ignorance and squalor will be ignorant and squalid till the day of their death. Only by impressing upon the children the importance of fresh air, and by practising what one preaches, can it be expected that they will hereafter carry out in their own homes the teaching they have received at school.

Long hours without breaks for recreation.

Any one who has had anything to do with children knows that to ninety-nine children out of a hundred, keeping quiet even for a short time, is about the most trying thing in the world. But when it comes to sitting at a desk for consecutive hours, during the nine most active years of their lives, then it will be realised that the system in Germany is a wiser one than ours. This is to allow the scholars ten minutes or a quarter of an hour's recreation at the end of each hour, so that they may run about and exercise their bodies and their lungs, and go back quite fresh to the next lesson. It stands to reason this is an excellent plan, and that the lost time is more than made up by the mental rest and physical stimulation. It helps to develop the child, who is naturally more or less cramped up sitting at a desk, and unfortunately very often in a stooping posture, contracting its chest and curving its back. When it is possible the recreation should be in the open air, the teachers of the class joining in, fresh air and change of idea being as necessary for them as for their pupils. The coming down to the level of the children and playing with them, promotes good understanding and develops affection for their teachers. During that recreation, children should be let run wild and scream and shout to their heart's content, and to the benefit of their lungs and limbs. Great harm is done to children by keeping them too long in one position, and it was recently stated that in a set of German schools, doubtless not among those who give a few minutes' recreation every hour, that while there was not one case of lateral curvature of the spine among the children of the first year's attendance, 52 per cent. suffering therefrom were found during their fifth or sixth year of school life. Doubtless what happens in Germany happens elsewhere, and one cannot speak too strongly in condemnation of keeping growing children confined to their desks during long consecutive periods.

Risks of infection.

In a vast congregation, and especially such a congregation as the boards schools, the risks of infection must be enormous. Apparently the teachers are not responsible for trying to guard healthy children from the diseases of those suspected to be suffering from infectious maladies. Probably, if a child is actually covered with a rash, it is packed off home. But the sanitary inspectors are responsible for warning the teachers, by sending them a form telling them that so and so is not to be allowed to attend school until further notice, as there is infectious illness at the home. In due course the teacher receives a notice saying that fear of infection being over the pupil may be received back. Of course, before the illness breaks out, the child may have passed on the germs of it to several others; but the risk has to be run, and considering the vast numbers, an epidemic causing the closing of schools is rare. Those who catch the infection most easily are the physically inferior, and that is why it is important to feed them up and make them stronger to resist. The importance of proper ventilation is also obvious, in lessening the risks of infection.

Measles seems to be most important of the zymotic diseases in its effect on school life, and Dr Kerr recommends that every school should keep a record of the measles history of each child attending it. Where outbreaks have occurred in single classes of schools otherwise free, the schools have been closed, and children coming from homes known to be infected have been rigorously excluded: this plan has been found successful.

Infection is often carried by the children from infants at home, and the system of double desks assists considerably in its spread. The use of slates, pencils, and pens in common, should be rigorously checked, and children taught to clean their slate with a sponge. As a matter of fact, most children if left to their own devices will spit on their slates and rub them clean with their fingers. This is not only a dirty habit, but may be the direct means of spreading diphtheria and other forms of infectious sore throat.

In his report for the year ending March 1903, Dr Kerr mentions a school epidemic of sore throat at Isleworth which was found to be diphtheria; its continuance, in spite of very active measures, was found to be due to the presence of the diphtheria bacillus in the throats of children to all appearance healthy. After the recent epidemic of sore throats at Woking, one cannot help wondering if infected milk could have had anything to do with this outbreak of illness of which Dr Kerr speaks, and in case of the occurrence of a similar epidemic at any future time, an inquiry into the milk which the children had been taking might throw some light on the question.

An epidemic grant, made by a certain clause (101) of the Code, removed any temptation on the part of teachers to keep up attendances at the risk of infection. Unfortunately, that grant has been abolished, and they are still remunerated according to the numbers of attendances. It would be wiser were teachers to be well remunerated for every case of infectious illness they were able to trace and report to the Medical Officer of Health; this would make them doubly watchful, and might often nip the evil in the bud.

Cleanliness of person.

Among the many serious difficulties with which teachers in elementary schools in large towns have to contend, is the personal uncleanliness of many of the children. In the worst districts the children are sent to school scantily clad and often swarming with vermin—veritable pictures of neglect and squalor. The interest and energy of the teacher will do much to minimise this neglect, and in some schools the children have gradually been made to understand that they must appear every morning with tidy clothes and brushed heads. It is curious to note that the lower in the social scale, the more scanty is the girl's hair, until among the dregs one sees nothing but the meagre wisp tied with a boot-lace and sticking straight out at the back like the tail of a pointer. It is to be suspected that these wretched heads are never touched with water, oil, or comb, and seldom with a brush.

As a rule, the smaller the child, the less neglected it is; and the majority of the infant class are better cared for than the older children. Mr Charles Booth thus graphically describes a class in Standard I.:—

"A sorry group they are; fifteen or twenty of them. . . . One or two are tidy looking boys; one has a clean washed face, and a white collar on. The rest are ragged, ill-kept, and squalid in appearance. Some are filthily dirty, others sickly looking with sore eyes and unwholesome aspect. But," he adds, "some of them are beginning to make a start. They come cleaner than they did, for one thing; and that is a great step towards civilisation. But this is the lowest circle in the mount of toil; and as we rise through the standards things improve. In schools of this class the lower standards are always the worst. Still even in them we can pick out a number, not a very large one, it is true, of tidy, tolerably healthy-looking children, fairly well fed and shod, and with tokens of being cared for at home."

The girls always look much smarter than the boys on account of their pinafores, and where the boys can be induced to wear collars the difference in the general appearance of the class is most striking. It will be understood that this matter of personal cleanliness is a difficult one to tackle, when the kind of homes the children come from are remembered. Until the dwellings of the labouring classes can be built with bathrooms, it is useless to expect the children to be spotlessly clean. Some double storied houses have lately been built at Battersea containing a fixed bath. The scheme which was originated by the Vestry has been carried through by the Borough Council. The total number of tenements on the estate is 315; there are 147 tenements of four rooms and a scullery, and 140 tenements of three rooms and a scullery, in addition to which there are 28 houses each containing five rooms and a scullery. Somewhat similar dwellings have been erected through the exertions of Mr James Corns at Leigh, Lancashire. There is much that is interesting about the plan and fittings of the dwellings, but here it is only necessary to refer to bath arrangements.

The bath is fixed in the scullery, and at the side of the kitchen fire is a circular copper heated by it, and supplying hot water in the kitchen and to the bath. The total cost of the Battersea scheme has been about £114,000, and the tenements are let at 7s. 6d. and 10s. 6d. a week, the houses at 11s. 6d. These are rents far beyond the means of the class from which the more neglected children come. It may be hoped, however, that it will not prove beyond the ingenuity of engineers to find some means of supplying even the poorest with facilities for bathing their children in their homes. Practically, at present the only thing teachers can insist upon is, that the children should appear with clean hands and faces and neatly brushed hair. The school authorities should assist in this by at least providing a sufficient number of wash-basins and towels in order that the children may be sent to wash their faces and hands when necessary. Dr Kerr draws attention to the fact that the supply of towels is scanty in most schools in London, and he suggests that a good rule would be to supply a clean towel daily, or at least on alternate days for each hundred children in attendance. This suggestion does not err on the side of extravagance. The following table compiled from the reports made by the nurses as to washing arrangements at London schools is interesting :—

Schools.	Number of Departments noted.	Average Attendance of Schools.	Number of Wash-basins.	Weekly Supply of Clean Towels.
Infants . . .	192	68,437	1,304	411
Girls . . .	175	59,215	1,434	452
Boys . . .	163	55,090	902	352
Mixed and Special	49	14,435	382	147

In summer there are the swimming baths. These exist in a good many schools, and should certainly be built in all. It may be suggested that in all new buildings the large drilling hall should occupy the ground floor and have a movable floor; under it should be formed the swimming bath which could be thrown open so many times a week; after use the water would be drained off and the movable flooring replaced. These swimming baths could be left open during all holidays, the water being warmed in cold weather, and the children allowed to bathe so many times in the week. A day might also be set apart for parents. This would not only encourage cleanliness, and so improve the physique of the poor, but in time would cause a distaste in them for the dirt and squalor they at present accept as part of their lives.

Let it be clearly understood that it will not suffice to have swimming baths if the water in them is not changed sufficiently often: more harm than good can be done to children bathing after large numbers have used the bath. This practice would be bad given clean, healthy children, but when it is realised that most of those of whom we are speaking are anything but clean, it becomes revolting and dangerous, and one shudders to think of the gulps of water accidentally swallowed. The headmistress of a board school stated in conversation this summer, that the whole school bathed so many times a week in the swimming bath, which, though a capital one, was by no means very large; the water was only changed once a fortnight, on account of expense, as the cost of refilling was eight shillings! The state of the water those children were bathing in at the end of the fortnight can better be imagined than described. Should such things be allowed by the sanitary authorities?

Much trouble is experienced by teachers in dealing with children sent to school with heads often swarming with vermin. This is a frequent cause of absence. In any such case the child can be completely cured in from ten days to a fortnight, but frequently is allowed to run on untreated for months. Dr Kerr asks: "Whether the policy should not be adopted of excluding the child, and then prosecuting the parents after reasonable notice, for not sending him to school in a fit state."

Elementary schools necessarily contain a mixture of children of very different grades of society, and it is a hardship for the carefully looked after to be, perhaps, sitting beside some unpleasantly dirty child at a double desk. For this reason, also, dual desks are to be condemned, and there can be no hesitation in agreeing, that strong measures should be taken against parents, who persist in neglecting to send their children to school at least so reasonably clean as not to infect others.

Dress.

Cheap finery gives many of the Board School children an air of squalor and untidiness. To see a fairly decent class in their school-room, especially on a Monday morning when their pinafores are clean, any observer would be favourably impressed. But were he to meet those same children in the streets, clad in every sort and kind of old coat, and wearing battered hats covered with stark feathers and filthy old flowers, he would be shocked at the contrast. Children attending Board Schools should be required to wear a neat hygienic dress. The parents would gradually see that for the health and appearance of their children, as well as for economical reasons, a neat dress of blue serge would be more becoming than the miscellaneous rags they are clad in now. Each girl should wear a flannel chemise, blue serge knickerbockers fitted to the waist with an elastic band, no stays of any kind. Uneducated parents would probably object to this, as they begin to put their girls into ill-fitting, steel-boned corsets at the most tender ages, ignoring that at the growing period of their life their limbs and chests should be free to expand. They should wear a woollen jersey and an over-dress with shoulder straps fastened into the waist with a loose belt. In summer the jersey might be left off and a cotton blouse substituted. For out-of-doors they should have capelines, such as all French children wear, that protect the ears and look tidy, and ulsters of the same colour, probably dark blue or scarlet. Not only would this neat dress be healthier and by its smartness give the schools a better tone, but it would raise the morals of the children and give them self-respect which few of them possess at present. In summer it is unnecessary in our climate that they should wear any head-covering, especially that particular class of children who live in narrow, shady streets where the sun seldom shines.

The sameness of the school clothes might have the effect of stopping pawning, for at present it is well known that the best of the children's clothes live half their time in the pawn shop, and in many cases where the London School Board provide boots, they have to be marked specially in order that the pawnbrokers may refuse to take them in.

Apart from the moral degradation of ragged and filthy clothes, there is the unhealthiness of it. What plant flourishes under bad conditions? And the same applies to growing children. If the outer garments are often repulsively dirty, one shudders to think what their under ones must be like. As we have already said on other subjects interwoven in this great social problem, let all our efforts be centred upon the rising generation. To them should be pointed out the moral and physical poison of dirt and neglect; only let it be taught to them in simple lessons easily understood, and let teachers be firm in refusing to admit to their classes untidy and dirty children, while singling out and holding out as examples to their companions all those deserving of praise. Often ten words of encouragement do more than a world of punishment, and too often, in dealing with the unfortunates of the earth, the tendency is to treat them as inferior beings, instead of helping them to rise superior to their surroundings. That is why such vastly better results are obtained by educated gentlewomen in dealing with social questions, than could be expected from routine work carried on by less refined though competent teachers.

CHAPTER VII

PHYSICALLY DEFECTIVE SCHOOL CHILDREN

> *"Childhood shows the man,*
> *As morning shows the day."*
> MILTON, "Paradise Regained."

Underfed School Children. Defective Vision. Teeth.

Insufficient food for the amount of work done.

To find out the real state of affairs with regard to the underfeeding of children attending Board Schools, is an almost insoluble problem, but we may take it that not so many as is generally believed are so underfed as to require free meals to be provided for them at the schools. Teachers have to discriminate between the really starving child of a respectable but poor mother unlikely to admit her penury, and the other class, the children of professional beggars who let them go hungry to school, in order that they may get food there, although the parents can perfectly well afford to feed them at home. It rests with the headmasters and headmistresses of schools to find out the real state of affairs. Thus it happens that where the head is a philanthropist, or tender-hearted, much more is done than in a school directed by a teacher who considers the labouring classes an ungrateful lot, and is, therefore, out of sympathy with any movement to help them.

The usual plan adopted by teachers who have it in their power to give free meals to the hungry children attending their schools, is to make a surprise inquiry among the children as to how their fathers and mothers are employed; what wages they are earning; what they had for breakfast, dinner, and tea the day before, and so on. A note is made of this, and further inquiries are made at random in the home to verify the statements. Children will not, as a rule, make up a pitiful story on the spur of the moment, but were it known by the parents that an inquiry was to be made, they would be primed with the most moving details.

There are, of course, many genuine cases of dire poverty, where the fathers and mothers are really doing their best to keep the bodies and souls of their families together, but there is always the fear that free meals at schools may increase pauperism among those quite well able to maintain their offspring, but only too glad to escape from that duty. Sir William Anson has declared that there are in London 60,000 children physically inferior and therefore unable to get the benefit of teaching in the schools. It may be presumed that a large percentage of this unfitness is caused by insufficiency of food or improper feeding. Mr Percy Alden stated recently that, in his opinion, 60 per cent. of the children attending schools were underfed, and that there was great need, especially in winter, to provide them with meals.

Dr Kerr reports that among the general causes affecting progress in school, ill-nutrition due to poverty or ignorance must be reckoned as important. There can, indeed, be no doubt that much misery among the child population, and subsequent physical inefficiency, depends upon the ignorance of parents, more especially with regard to infant feeding.

Funds are raised by some of the teachers, who beg for subscriptions from their friends. In some schools the better-off pupils are asked to collect, but in other schools this practice is condemned. As an example of a free meal fund the Lambeth Teachers' Association Scholars' Free Meal Fund, may be mentioned. Through its agency for the last ten years, underfed children attending the Board and Voluntary Schools of Walworth, Newington, Camberwell, and Peckham have been given meals. In addition, cases of cruelty on the part of dissolute and culpably negligent parents have been reported to the Society for the Prevention of Cruelty to Children. The Free Meal Fund is managed by those who are not only brought into contact with these suffering little ones, but also with the real condition of their homes. There is a general committee as well as sub-committees who take charge of the feeding centres established in different parts of the districts named. To these centres fortnightly grants are made. The Food Supply Depôt in the crypt of St Peter's Church, Walworth, is managed by Rev. J. W. Horsley and a band of voluntary workers.

The fund can supply 5000 meals daily at a cost, inclusive of preparation and distribution, averaging 1d. per meal. To the thousands of children sent to school with a make-shift dinner of perhaps a slice of bread and butter, these hot meals are a real godsend. There are three classes of the hungry—those able to pay their penny, those only able to pay part of the cost (numbering 8646 in 1902), and those who are given a free meal. On behalf of the last class appeals were made for 60,000 last winter.

No matter how excellent the work done by these unselfish societies, it seems impossible to discriminate between the million children contained in Board and Voluntary Schools in London without passing over many a starving child. The only sound plan would seem to be, to provide every one of the pupils with a dinner at school. For this, those who are able should be required to pay, while charitable funds, such as the one described above, would defray the expenses of the meals given to the extremely poor. Strenuous efforts should be made to organise a cooking centre at each school large enough to supply these dinners. The pupils should take turns to cook the meals under efficient supervision and instruction. The effect upon physique would be lasting, for few girls after enjoying for nine years decent dinners at school, would, when they got homes of their own, return to the squalor and discomfort of meals as they are too often served in the families of the labouring classes in England. The elder girls should be trusted with small weekly sums for the purchase of the materials necessary for the dinners, and should be trained to do the shopping and keep accounts, so as to learn the value of money. Lectures should also be given on the properties of various foods and their relative value, on the lines sketched in a previous chapter.

We may take it that no child attending an elementary school is likely to be better fed at home than if the above system were adopted. Every child, therefore, would benefit, or at least would lose nothing, while to the underfed the gain would be great. Many of the consequences of mal-nutrition, such as stunted growth, deficient muscle, inattention, weariness, want of concentration, would be prevented. Further, if underfed children are not actually more susceptible to contract infectious diseases, they are undoubtedly more likely to suffer severely from an attack and its sequelæ. In the discussion on the relation of poverty and disease, the Deputy Chairman of the Sanitary Committee of the Corporation of Manchester expressed the opinion (1902), that large numbers of children of school age succumb to phthisis and lung diseases, partly owing to defective nutrition and partly to lessened power of resistance to infection.

It is a curious sight to notice how the lower the scale of poverty, the duller the children look, some of them seeming very little better than imbeciles: their brains starved for want of blood.

Eyes.

The injurious influence which school conditions may have upon the eyesight, and the arrangements which should be made for providing children, who need them, with suitable spectacles, is one which has in recent years attracted much attention, and efforts have been made to grapple with the difficulty by engaging oculists to examine the children's eyes. This is a move in the right direction, but unfortunately, the numbers recommended to apply to the hospitals for treatment have been so large, that they have swamped the out-patient departments, and one hospital at least — the London — has refused to treat such cases. Some way of solving the problem must be found, for to cast upon untrained teachers the responsibility of diagnosing eye troubles, some probably of the most grave description, is no real solution.

The question whether defective arrangements in the class-rooms may not be responsible for causing or aggravating the bad sight from which so many children now suffer, deserves more attention than it has yet received. Insufficient light in schools may, doubtless, do a great deal of harm to children possessing not necessarily bad sight. The light is bound to be better in some parts of the room than others, and every effort should be made to equalise it, and to give plenty to those having to give close attention to reading or writing. Often children seem slow or stupid when, in reality, their progress is retarded by tired eyes. It is well known that continued straining of the eyes also strains the nervous system, and Dr Kerr, therefore, recommends that fine finger and fine eye-work should be discouraged in infant departments. He advocates coarse work, such as free-arm drawing with chalks standing at a blackboard. "The necessity," he says, "for a very considerable eye-working distance, especially for young children, is at the root of educational hygiene; attitudes, fatigue, nutrition, the development of good physique, and a stable nervous system are all involved in this question, and it is to be hoped that the oculists will succeed in impressing the teachers and others with its supreme importance in school work."

It is noticeable what large numbers among the children of the labouring classes have sore eyes due to dirt and neglect. Dr Kerr states, that in London many children are excluded by the teachers on account of inflammatory diseases of the eyes, commonly spoken of collectively as "blight." Apparently only a small proportion of these cases are instances of true trachoma. This is fortunate, for this disease not only produces serious permanent injury if neglected, but is also exceedingly infectious. In 1902 there were 17,000 cases, and at the present time it still prevails to a serious extent in the elementary schools of New York. It is believed to have been introduced by the poorer class of emigrants; the earlier cases were not treated or isolated, the infection spread rapidly to other classes of children, and the municipality of New York has now been compelled to incur a very large expenditure in organising a crusade to check the spread of the disease. The disastrous experience of the pauper schools in England, under the control of guardians, and the persistence with which the disease has continued year after year, breaking out every now and again in serious epidemics, ought to be sufficient to render the school authorities vigilant in the prevention of this dangerous malady in elementary schools.

Among other consequences of dirt and neglect in young children, are catarrhal conditions of the ear which, if neglected, not only interfere with their education, but in many instances cause permanent deafness. Dr Kerr states, that his experience is that about 1 per cent. of the children suffer from discharging ears, and it is probable that deafness interferes to a very considerable extent with the educational progress of at least 5 per cent. of the children, and, to some extent, with at least 10 per cent. more. He also calls attention to the catarrhal conditions in younger children frequently present with debilitated conditions and want of exercise, want of development of respiratory capacity, and retarded school progress. The adenoid hypertrophy associated with open mouth and frequently excessive nasal discharge, has mental accompaniments of bad memory and incapability of maintaining the attention. In these cases, where the child also snores at night, operative means are necessary. Unfortunately, too often, even on medical advice, parents believe that the children will grow out of it, but they are liable, in the meantime, to suffer sadly in educational efficiency and in stability of character, and to have liability to permanent deafness or greatly increased mortality from zymotic diseases.

Teeth.

Little or nothing seems to be done for the teeth of the children of the labouring classes, and certain it is that it is rare to see them with a sound set of teeth. That nothing should be done to arrest this seems all the more surprising, when it is remembered how large a percentage of recruits (49·26 per 1000 in 1902) are rejected on account of bad teeth, or from insufficient number due to numerous extractions.

In connection with the subject of dental caries it will be necessary to go back to the period of infancy. It should be remembered that the calcification of the teeth commences in infancy, and that, in fact, the cusps of the first permanent molars are partly calcified at birth though not yet united together. The accompanying table gives some particulars with regard to the process of calcification during the first three years of life.

Dr William Hall, of Leeds, who has made an investigation into the home feeding of Jewish and Gentile children in Leeds, has tabulated the results showing the average physical development, at various ages. He finds that the Jewish child not only presents better physical development but suffers to a less extent from bad teeth. Comparing a Gentile school in a good district with a Jews' school in a similar district, he found that among the Gentiles 8 per cent. had rickets, 38 per cent. had bad or backward teeth, while among the Jews 5 per cent. had rickets and 11 per cent. defective teeth. In a Gentile school in a poor district he found rickets in 50 per cent., and bad or backward teeth in 60 per cent. of the children; among Jewish school children in a school in a similar district 7 per cent. had rickets and 25 per cent. bad or backward teeth. The percentage in the Jewish poor district town school was better even than in a country school, where 7 per cent.

Calcification of permanent teeth (man).

	At Birth.	At 6 Months.	At 3 years.	Age of Eruption.
				Years.
Central incisors .	...	Cap of dentine 3·0 mm. long	Crown complete	6½ to 8
Lateral incisors .	...	,, ,, 2·5 mm. long	Cap of dentine 7·0 mm. long	7 ,, 9
Canine . .	...	,, ,, 1·0 mm. long	,, ,, 8·0 mm. long	11 ,, 13
First bicuspid .	...	...	,, ,, 5·0 to 6·0 mm. long	9 ,, 11
Second bicuspid	...	...	,, ,, 1·0 to 2·5 mm. long	10 ,, 12
First molar .	Cusps calcified	,, ,, 2·0 to 3·5 mm. long	Crown complete, root 1·5 mm. long	5½ ,, 7
Second molar .	...	...	Cusps calcified	11½ ,, 13
Third molar .	...	...	...	17 ,, 24

of the children had rickets and 33 per cent. bad or backward teeth. Evidence that this condition of the teeth is, at least, associated with better physical development, is shown by Dr Hall's observation that the Jewish child aged 7 years weighed on the average 4 lbs. more than his Gentile neighbour, at 9 years 7 lbs. more. The difference he is disposed to attribute mainly to the fact that Jewish women are better nourished during pregnancy, are more anxious to suckle their children, are more attentive to them in early childhood, and feed them with more intelligence. It would therefore seem not impossible that defective nutrition during infancy and early childhood may have some effect upon the regular progress of calcification in permanent teeth.

Scientific experience is to the effect that defects in teeth due to imperfect nutrition will only influence the portion of the teeth then being calcified, as no change is known to occur in a tooth once formed. It would appear to follow from this, that if the progress of calcification in the permanent set is disturbed during infancy or early childhood, any damage then done is never recovered from. An acute illness will mark teeth by a line just as the nails may be similarly marked, so that the nutrition of the teeth is interfered with in the sense that it is stopped or checked for a time. This line, of course, marks the edge of the dentine formed at the date of the illness, and thus does not occur on all the teeth at the same level. Further, it is well known that stomatitis will interfere greatly with the formation of enamel, although it is not known to effect the dentine which is often of good formation under a honeycombed enamel. In children suffering from rickets, the temporary teeth are often seen to be broken or ground down almost to the gums; but the point to which we desire to call attention is the possibility that failure of general nutrition, which certainly retards the calcification of the teeth, may possibly render them more vulnerable. The mischief can be increased by neglecting to brush first teeth. As a matter of fact they are generally altogether neglected, for the public do not seem to realise that a carious milk tooth can perfectly well cause a permanent tooth cut alongside of it to become carious also. Except among the more instructed classes the periodical visit to the dentist is unknown; until a tooth begins to ache nothing is done, and even then all sorts of nostrums and domestic remedies are tried, until, as a rule, when the dentist is eventually visited, extraction is the only possible treatment. This, of course, ought not to be, and among the classes earning good wages it seems to be due mainly to indolence, ignorance, or carelessness, for we believe it to be true that reasonably skilled conservative dentistry is now available for them at rates within their means in all large centres of population at least, and would be even more general but for the laxness of the law and the slackness of authorities and magistrates, in permitting all sorts of ignorant quack dentists to impose upon the credulity of the public. With regard to the very poor, however, the case is different; the Poor Law Authorities make little or no provision, and the dental hospitals are quite incapable of dealing with the immense mass of work which ought to be done.

The determining cause of dental caries is to be found in the activities of certain microbes commonly present in the mouth. Some of these produce by fermentation of the food lactic and other acids which dissolve the lime salts of the teeth, while others attack the dentine directly. So long as the enamel remains intact they produce no effect, and even when the dentine is exposed, if its surface be smooth, they do little harm, as was proved by the old practice of levelling, smoothing, and polishing the surface of exposed dentine. The first essential for the production of caries is some depression or cranny in which food particles are retained, and where they undergo decomposition. The points of contact between the teeth may afford such nooks, as may also natural depressions in the crown, or slight congenital defects. For instance, deep pits or clefts may exist in otherwise sound and well-formed teeth, and the bottoms of such clefts are commonly not covered with enamel; in such cases caries is almost inevitable, but if treated early, excellent and permanent results may be obtained. But it cannot be said that caries traceable to collections of food in other depressions is equally inevitable; on the contrary, strict attention to cleanliness by removing the pabulum of the microbes will be an effectual preventive of caries.

There is no doubt that even in the artisan class small attention is paid to the brushing of teeth night and morning, and it may safely be surmised that lower down in the social grade it is almost absolutely neglected, and will be neglected until the ignorance prevailing on the subject is lifted. The solution lies with the growing generation. Let them be taught in the elementary schools the evil consequences, direct and indirect, of the neglect of teeth. The great importance of using a toothbrush with stiff bristles should be impressed upon them, as well as the strengthening effect upon the gums of cold water, and charitable societies might use their money well by distributing tooth brushes and tooth powder. Bad teeth prevent proper mastication, and the sufferer is reduced to eating soft food stuffs; the teeth get no exercise, and dyspepsia, a disease so much found among the poor, is the inevitable result. Children should be discouraged from eating quantities of cheap sweets. Sweet shops have the same attraction for the children of the labouring classes, as public-houses have for their parents, and any pocket money they are allowed to have is spent upon cheap sweets.

Provision by the Poor Law Authorities and by charitable agencies, of more ample opportunities for obtaining conservative treatment should be forthcoming, while quack dentistry should be vigorously put down, in the interests of the labouring poor.

To sum up, it would appear that the present excessive prevalence of dental caries might be checked by the better teaching in elementary schools of hygiene, including care of teeth; by encouraging the habit of cleansing the teeth daily among all classes, and by the systematic examination of the teeth of children in elementary schools by competent dentists.

CHAPTER VIII

MEDICAL INSPECTION OF SCHOOL CHILDREN

"After death, the doctor."
HERBERT.

The Prevention of Epidemic Diseases. Medical Inspection of School Children in Belgium, Germany, and America. The Boston System. The Influence of Systematic Medical Inspection in improving School Attendance.

THE State, having made education compulsory, cannot divest itself of the responsibility of taking reasonable precautions, to ensure that the conditions under which children are instructed shall not be such as to disseminate infectious diseases, or produce physical deterioration. The occurrence of epidemics of measles, whooping-cough, scarlet fever, and diphtheria among school children, is a frequent cause of more or less prolonged interruptions of school work, and the consequences of such diseases are often serious to the individual children, checking normal development and leaving behind them affections of the eyes and ears which, if they do not produce permanent disability, frequently interrupt the child's education for many months. It is therefore as important from the educational as from the public health point of view, that means should be devised for preventing public elementary schools being channels for the dissemination of the specific diseases. Measles and whooping-cough, scarlet fever and diphtheria are the specific diseases of most importance in this connection. To close a school on account of the prevalence of, for example, measles, is an admission of failure to which educational authorities very naturally object; it is, moreover, an expedient of doubtful efficacy, for there is reason to believe that the closing of schools has, on some occasions, even caused the extension of outbreaks of such diseases as measles, whooping-cough, scarlet fever, and mumps. The only logical course is to exclude children in an infectious condition from the school, and thereby prevent them from becoming centres of infection to their fellow-pupils. To make this plan effective, it is essential to have a system which will ensure that the earliest symptoms of illness shall be recognised by some person responsible to the school authority, in order to exclude such children and prevent their readmission until all risk of infection has passed. The co-operation of teachers is necessary, and if the interest of parents can also be enlisted the system is all the more likely to be successful. But it is not reasonable to cast upon teachers the responsibility of deciding whether a child is or is not in an infectious state, without reference to medical opinion. Moreover, there are other diseases and defects incapacitating a child from receiving the full benefit of the teaching provided ; many of these a teacher may suspect without being able positively to determine that medical treatment or special classes of instruction are necessary. Some School Boards have appointed medical officers to advise them upon matters affecting the health of the children, and a great deal of work has been done by these officers in respect of ventilation, heating, lighting, and other matters of general principle. But it is impossible for a single officer to an authority with a large number of schools, even if he has the help of two or three skilled assistants, to watch over the health of individual children. Certain Boards have endeavoured to meet the difficulty by appointing trained nurses, or accepting the services of nurses provided by voluntary effort. These nurses are supposed not only to attend to the minor ailments of the children, but also to detect the first signs of infectious disease.

While it is true that the services of trained nurses may often be very valuable, it cannot be admitted that their employment really solves the difficulty; they may be very useful in helping teachers to recognise that a child is out of health, and by carrying out suitable treatment may do much to prevent the spread of, for example, infectious eye diseases. But it is too much to expect them to be able to answer the often very difficult questions as to whether a child is sickening for an infectious disorder, or has, after recovery, ceased to be capable of spreading it. A teacher who notices that a child is ill should be able at once to refer it for a medical opinion. This is not the case in this country where no effective system of medical supervision exists, although the need for it is, as a rule, accepted in principle.

The principle that the medical inspection of school children is necessary, appears to have been first put into force nearly thirty years ago in Brussels. Improvements were introduced some twelve years ago, and the very complete system of medical control and inspection now carried out there has led to a marked diminution of disease. More recently systems of medical supervision have been established in many of the large German towns, among others in Frankfurt, Wiesbaden, Dresden, and Leipzic. In the last-named town, where there are 67,000 children, eighteen medical inspectors are employed. New York, Philadelphia, Chicago, Boston, and many other cities in America have established daily medical inspection. The first city to organise the work was Boston, and its system seems still to be the best. The medical inspector visits the school each morning soon after it opens. The first duty of the teacher, as soon as the class assembles, is to pick out any child who appears to be ill, who complains of any symptoms, or whose parents wish for an examination. These children are sent to a special room where they are seen by the medical inspector, who decides whether they are fit to attend school; if a child is found to be ill, it is sent home with a note stating the reason why it is dismissed, and advising the parents as to the steps which should be taken. He keeps a record of all cases declared to be unfit to attend school, and sends reports in respect of all infectious cases to the health authorities, but never undertakes the treatment of the child; his duty ends with the recognition of illness, and the advice to the parents to have it treated. Before a child is permitted to return to school after illness it is again examined by the medical inspector.

As showing the amount of work to be done and the character of the diseases recognised, it may be stated that in 1899 the number of pupils referred by the teachers for medical inspection was 17,449; of these, 2,583, or 14·8 per cent., were sent home. It is instructive to note that of these 2,583 children no fewer than 468, or 18 per cent., were suffering from acute specific infectious diseases; it is almost impossible to estimate the amount of illness and interruption of school attendance thus prevented. A far larger number were sent home on account of diseases of the throat, mouth, or chest, and the number of rejections on account of skin diseases was still greater. In New York, during the same year, 128,787 children were referred to the medical inspector, and 9,367, or 7·3 per cent., were excluded; in 716 instances, or 7·6 per cent. of the cases excluded, the child was suffering from measles, whooping-cough, scarlet fever, or diphtheria. Contagious diseases of the eye were the cause of exclusion in 1,894 instances, and skin diseases (including dirty heads) in 5,486.

The objections which have stood in the way of the adoption of a scheme of the kind in this country, do not appear to be valid. In the first place, it has been maintained that such systematic inspection is unnecessary, but the experience of Boston, New York, and other cities proves conclusively that a great number of infectious cases may thus be early detected, with the double result that school attendance is more regular, and the prevalence of epidemic diseases is checked. In the second place, it has been objected that the system casts undue responsibility upon teachers and increases their work. It must be remembered, however, that the reference to the medical inspector is made at once, and as the number of children sent to him on any one day is not numerous, his answer, which relieves the teacher of responsibility, is given after a very short delay. Experience proves also that parents appreciate the interest taken in their children's health, and when in doubt will send a message by a child who appears to be out of sorts. Thirdly, it has been said that the duty of the medical school inspector would clash with those of officers of the public health department. But this is far from being the case. In respect to infectious diseases his position would be that of a notifying practitioner, and in other cases he would merely advise the parents to obtain proper medical treatment. Lastly, there is the objection that the system would be expensive and cast an additional burden upon the rates; to this it may be replied firstly, that as it would diminish infectious disease it must lessen the expenditure of the sanitary authority; secondly, that the system would prevent the waste of school accommodation and loss of grants; and, thirdly, that the expenditure need not be great. In Boston, the medical inspectors are, for the most part, young men commencing general practice. The city is divided into fifty districts; a young practitioner resident in each district is selected, and receives £40 annually for his daily visit to four schools with an average of 1400 scholars. The total expenditure on medical inspection in Boston is thus about £2000 a year.

Systematic medical inspection, however, would do a great deal more for education than is implied merely by the detection and prevention of infectious disease. It would be found that a large proportion of the children referred for examination were suffering from defective sight or hearing, or from nervous disorders, or were mentally defective. Further, the investigations of Dr Warner * have shown that the trained eye can quickly detect, by the appearance and attitude, cases in which the child is being, from any cause, overstrained. A note would be made in the case of all such children, and inquiries as to the cause would follow. In fact, teachers might be expected quickly to get into the habit of sending

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* *The Study of Children.* By Francis Warner. London, 1898.

all children who were inattentive, or who did not make proper progress in class for medical inspection. Where the cause was found to be defective sight, the parents would be advised to obtain proper spectacles, and means should be taken through the school attendance officer to see that the advice was carried out. If a parent persists in refusing to place the child in a position to benefit by the education provided by the State, means exist, as it is pointed out elsewhere, for bringing him to a sense of his duty in this respect. If the case were found to be defective hearing, the parent would be advised to obtain proper treatment for the throat or ear as the case might be. Backward children would be drafted into special classes, children suffering from chorea and other nervous disorders would be excused attendance until they had recovered, and in the case of nervous excitable children the teachers would know that they must show them special consideration.

CHAPTER IX

CHILD LABOUR

> *"But what am I?*
> *An infant crying in the night:*
> *An infant crying for the light,*
> *And with no language but a cry."*
> TENNYSON, "In Memoriam."

Legal Regulation of Child Labour. Employment of Children out of School Hours. The Employment of Children Act, 1903.

THE Elementary Education Act of 1876, declared it to be the duty of the parents of every child to cause it to receive elementary education for three hours—reading, writing, and arithmetic. Practically it fixed the earliest age for leaving school at 10 years. The general tendency of subsequent legislation has been to prolong the period of attendance at school, to raise the standard the child must pass before leaving, and to postpone the age at which it may legally be employed. At the present time the prohibition of employment of a child under 12 years of age in a factory or workshop is absolute. After attaining the age of 12 years the child may obtain partial exemption ; that is to say, he may work half-time if he has passed Standard V. or made 300 attendances for five years, or if he has passed Standard VII. The exemptions are obtainable on easier terms after the age of 13, and all children over 14 are exempted from school attendance, with the exception of the blind and deaf, who are required to attend until 16.

The Education Act, however, did not touch upon the employment of children out of school hours, and, as a matter of fact, quite young children attending school are compelled to do a great deal of work. The census of 1901 showed, that between the ages of 10 and 12, there are in England and Wales 2,673,967 children, the sexes being pretty evenly divided, 1,334,688 boys and 1,339,279 girls. Of these children, 138,130 boys and 70,362 girls are at work. There are, for instance, 142 10-year old charwomen, 505 employed in laundries, 681 in the tobacco trade, 450 in the jewellery and watchmaking industries, 674 in the earthenware trades, and 30,367 in various textile occupations. There are 22 girl messengers, 19 photographers, and 102 actresses—all 10 or 11 years old. The report of the Departmental Committee on the Employment of School Children (1901), brought to light the facts that at least 200,000 children were being employed for profit at industries not under Home Office inspection, while at the same time attending school full time. Probably some 50,000 of these children were being worked more than twenty hours a week in addition to their twenty-seven and a half hours at school; a considerable proportion were employed for thirty, forty, and, in some cases, for fifty hours a week, with, in many instances, detrimental effects to their health, morals, and education, besides depriving them of reasonable recreation.

As examples of the lives lived by these children, the following cases related to Mr George R. Sims by Board School officers may be quoted:—

A. B.—Aged 12, is a milk boy. His hours of work are 5 A.M. to 8.45 A.M.; 12.30 P.M. to 1.30 P.M.; 5 P.M. to 8 P.M., and he attends school between times.

C. D.—Frequently fell asleep in school; this caused suspicions that he was working during the night. An investigation elicited the fact that four nights a week he went to Billingsgate Market, at 11 P.M., with his grandfather, and worked till early morning loading and unloading fish boxes.

E. F.—The son of a haddock-curer. Had frequently to work from 1 A.M. to 4 A.M., and was also employed by his father in the day-time in the intervals of school attendance.

A very interesting report on wage-earning school children, founded on inquiries made from the head teachers of the 159 elementary schools in the city, was presented recently to the Manchester Education Committee. It was found that over 3000 school children were at work, and that their hours of labour ranged from a minimum of one a week to a maximum of sixty-eight and a quarter. More than 200 worked from thirty to forty hours a week, about 64 from forty to fifty hours, 9 from fifty to sixty hours, and 1 child of 12 years worked on a farm for no fewer than sixty-eight and a quarter hours per week. The occupations in which the majority of the children were engaged, and those working the longest hours, were in vending and distributing newspapers, in barbers' shops, errand boys in retail shops, in the milk business, and to a lesser degree in domestic work of various kinds. One child of 6 years of age was said to be engaged twenty hours a week in selling newspapers. Amongst about 20 children of 7 years old, 1 was employed twenty-seven hours a week also in the sale of newspapers, and another ran errands for twenty-six hours a week. Other children of this age worked seventeen, twelve, and eight hours, and under. There were from 40 to 50 children of 8 years of age working for twenty-five, twenty-four, and twenty-one hours, and less. About 120 children of 9 years of age were engaged, and 1 of them at least worked twenty-nine to thirty hours a week. The ages of the rest of the children varied from 10 to 13 years of age. The wages of the children did not seem to bear any proportion to the number of working hours. The boy who was said to work on a farm for sixty-eight and a quarter hours a week received 3s. 6d. and his keep, but found his own shoes. The sale of newspapers appeared most profitable, and some of the children's earnings ranged from 7s. to 11s. per week.

Even worse abuses exist, for there is good reason to believe that there are parents so wanting in a sense of duty, and so anxious to get rid of their responsibilities, as deliberately to send out their children to trade in the streets in the hope that they will attract the attention of the police and be sent to a reformatory school. There are also careless parents who allow their children to follow their own sweet wills in search of pocket money, and others so poor that the small earnings of quite young children are important items in the family budget. It is therefore necessary to have power to control child labour, both casual and regular. That power is now given to local authorities by the Employment of Children Act, 1903: the Act gives power to regulate every form of juvenile labour, street-trading, domestic and shop work, home industries, and agricultural employment, the general rule being that no child shall be employed after 9 at night or before 6 in the morning; but the local authority has power to vary the hours. No child must be employed in any occupation that could cause injury to its health or mental capacity, and no child under 11 may engage in street-trading. No child under 10 may be employed in a theatre or music hall, and the local authority has power to prohibit children between the ages of 11 and 13 from being so employed; the Act goes a great deal further than any previous legislation by attempting to control the employment of children in domestic work. Instances are on record of children who have been made to work for no wages by their own parents, for forty or fifty hours a week, in industries carried on at home. In future, the officer of the local authority will have the power to obtain an order from a justice of the peace to visit any place at which there is reason to believe a child is being employed. Not only is a parent liable to be fined on conviction, but any child under 14 is itself liable to be fined for the first offence, and may if convicted again be sent to an industrial school: if over 14 years of age, the street-trading child may be fined as much as £5 for violation of local bye-laws in respect to hours of work. Much will depend upon the nature of the bye-laws adopted by local authorities, but it is to be hoped that they will, as a rule, forbid the employment of children in certain occupations; as, for instance, in small public-houses, small laundries, and in the lowest class of barbers' shops: or at least subject all such places to systematic inspection. In fact, it will no doubt be necessary to register all places in which children are employed.

The circular, issued by the Local Government Board, has pointed out that the hours of employment of children should never exceed twenty weekly, and that they should be at work for not more than eight hours on Saturdays. The co-operation of the local education authorities will be required to make the Act effective. They should furnish returns, giving particulars of all children employed for wages, and should instruct teachers and attending officers to notice any cases in which the physical or mental well-being of a child is being endangered by excessive strain. The power should be given to the local authority to deal with all employments by license, or to restrict those which are undesirable.

If a system of licensing all boy and girl workers were adopted, it would be easy, on account of the name, address, school, occupation, and hours of labour appearing on the register, to discover any infringement of the Act. It is to be hoped, however, that the new powers will be judiciously administered, as there is a certain risk that the Act may become a dead letter if an attempt is made to enforce it too stringently. It would, in fact, be a hardship to deprive the very poor, say a widow with many young children, of the help that the labour or the earnings the elder children can give towards maintaining the family. In the second place, and this is perhaps the more important point, the only alternative open to the vast majority of children employed out of school hours is to play in the streets, to hang about the doors of public-houses, and to witness and in time to emulate the exploits of the hooligan. If there were recreation rooms for them in winter evenings, parks and school playgrounds for summer afternoons, the case for total prohibition of employment of children, except in domestic employment in their own homes, would be strong. As things are, regular light employment may, by keeping them out of the streets, be the lesser of two evils.

CHAPTER X

EDUCATION OF THE ANCIENT GREEKS

"Childhood is like a mirror, which reflects in after-life the images first presented to it." SMILES, "Character."

Religious Character of the Public Games. The Care of Infants. The Education of the Young Child. Physical Training.

THE physical and intellectual beauty of the ancient Greeks, of which proofs innumerable have been handed down in their literature and works of art, resulted from their public games. These formed part of a religous observance which bade them worship their gods with athletic contests.

No other nation has ever produced such perfection of human form, no other institutions have ever had such influence in moulding and elevating the mind. No honour has, in the world's history, been so coveted as that perishable garland of wild olive, cut with a golden sickle from the sacred tree brought by Hercules "from the dark fountains of Ister, in the land of the Hyperboreans, to be a shelter to all men, and a crown of noble deeds," won at Olympia, in presence of the delegates of empires and cities and enthusiastic multitudes assembled from the remotest corners of Greece for the great festival. This simple crown placed on the head of the victor, together with the palm he held in his hand, were awarded so that the combatants might contend for glory and not in the desire for gain; but the glory of the victor was immortal, and among the Spartans he had, as his prerogative, the post of honour in battle. Great sculptors, such as Praxiteles and Phydias, were engaged by the State to immortalise his form, and from the palæstra and gymnasium an inexhaustible supply of perfect models of youthful grace and manly strength were handed down to posterity. Pausanias mentions 230 bronze statues of Olympian victors adorning the streets and public places of Olympia even after her destruction.

The moral effect of these contests was as wonderful as their physical value, for apart from their religious character all athletes competing must be of pure Hellenic descent, and must be free from religious or civil stain. In the presence of the presidents sitting in the Boulenterion they must lay their hands on the bleeding victim, and in the presence of witnesses swear that they had no blot on their character which could prevent them from competing. This is why their warriors were the finest in the world and their traditions imperishable. So deep was the influence of these religious contests on the people of Greece, that the care of their children's physique was uppermost in their minds, from earliest infancy. Their son must be perfect in body, so that he might grow up one day to be a warrior able to fight for his country. Thus the father had the right of life and death over his offspring. On their birth they were laid at his feet, when, if he despaired of being able to correct certain defects in their conformation, he made a sign and they were instantly carried away to be put to death.

The Lacedemonians bathed their infants in wine; weakly children fell into convulsions at this or fainted, while those having a vigorous constitution acquired by it a greater degree of firmness. It was the duty of women bearing children to eat nourishing food and to take gentle exercise, and they were constantly reminded of this duty.

Aristotle writing on the care of infancy says, "Once the children are born, it must be understood that the character of their diet makes a great difference to their bodily strength. From careful observation of the lower animals and of peoples which devote themselves to the creation of a warlike condition, we find that a diet consisting mainly of milk is best adapted to their bodies, and one without much wine on account of the diseases which it produces. Further, it is good for them to make all the movements that it is possible for them to make at that age. To prevent their tender limbs being deformed, some peoples, even at the present day, have recourse to certain mechanical appliances to make their children's bodies straight. (The Spartan nurses were so careful and experienced, that they brought up the children confided to them straight and well proportioned without the use of swaddling bands. So celebrated were these nurses that they were employed throughout Greece.) It is a good thing too to accustom them to cold from early childhood: it is most serviceable from the point of view of health and as a preparation for military service. This is the reason of the custom which prevails among many of the barbarians, either of dipping children after birth into a cold stream, or of covering them only with a light wrapper as the Celts do."

Usually, the child was bathed in warm water. It was then put in one of the wicker baskets used to separate wheat from chaff: this meant the presage of future opulence or of a numerous posterity.

Women of the highest rank suckled their babies. At a later period of Grecian history female slaves were employed as wet-nurses, nurses generally becoming the friends and confidants of the girls they had brought up. Barthélemy in his *Travels of Anacharsis* states, on the authority of Plato: "So rapid is the vegetation of the human body in the first five years of infancy, that, according to some naturalists, it does not double its height in the twenty succeeding years. It then requires plentiful nourishment, and much exercise. Nature agitates the infant with a secret restlessness, and nurses are often obliged to take him in their arms, and gently lull his brain by pleasing and melodious songs. It should seem as if long habit had led them to consider music and dancing as the primary elements of our education. These promote digestion, procure calm sleep, and dissipate those sudden terrors which external objects are apt to produce on the yet feeble organs." After the child was weaned it was fed on pap, made with honey. When nurses carried infants who cried through the streets, they applied to their mouth a sponge dipped in honey to quiet them.

Schools in Athens were kept by private teachers, the Government occupying themselves only with the moral qualifications of the school-master. Music, drawing, grammar, and gymnastics were the ordinary subjects taught.

Aristotle was of opinion, that, to put the child to lessons before its fifth year would be to interfere with its growth. Occupations, above all play, must be given it in order that it might get motion enough to counteract sluggishness of the body. The games must not be vulgar, and must be neither too slack, too soft, nor yet too fatiguing. Officers, called inspectors of children, were to decide upon the kind of stories, true or fictitious, which were to be told to children of this age, so that reverence might be aroused by properly chosen subjects.

As all these things were a preparation for later life, most of their games were to foreshadow what they would have to do in earnest later on. Aristotle was emphatic in the matter of allowing children to shout and cry, and he was of opinion that the prohibition of this by the laws was a complete mistake. It was good for growth, in fact a sort of gymnastic, for as holding the breath gave people strength in gymnastic exercises, so children get the same advantage by shouting.

Children were not to be allowed into the company of servants during the time—up to seven — when they were necessarily at home. They would catch a taint of lowness from what they saw and heard. Xenocrates said that children needed ear-protectors even more than boxers did. The Greek mother was taught to be particularly careful as to the first impressions her son received—"impressions sometimes so powerful and durable as to leave traces on the character for the remainder of life." A mind continually agitated in infancy by idle terrors, it was held, would become more and more timid, therefore she was taught to withhold from her child all objects that might increase his fears, instead of multiplying them by menaces and blows

Aristotle laid it down that there were, broadly, four subjects which enter into education: reading and writing, gymnastics, music, and drawing. Reading and writing were of the highest utility for practical life, and gymnastics to promote strength and courage. Music, as a pastime, was useful in making youths use leisure rightly, and to excite in them feelings of tenderness. Music represented the mental training of the Greeks, embodied in the art of expression; gymnastics the physical training. In the intervals of running, wrestling and bathing, youths were instructed on such subjects as beauty, truth and goodness. Thus, as their curiosity was aroused by the elegant discourses of the philosophers, they learnt to defend their opinions upon many subjects with facility and grace.

Children began physical exercises at a very early age, sometimes as early as 7, and they continued them until they were 20. They were first taught to be hardy by bearing heat and cold, and then began with gentle exercises which consisted of throwing balls of different sizes to each other. As their strength developed they were taught to hurl javelins; to run in deep sand; to leap over ditches and barriers; to throw into the air quoits of brass or stone; and to hold heavy leaden weights. Later, they were trained to run once or oftener the length of the stadium, frequently in heavy armour. Their chief exercises were wrestling, pugilistic encounters, and the various combats which took place in the Olympic games. A boy was required to indulge in games with moderation and to correct their effects by mental exercises: he was taught arithmetic, geometry, and astronomy. Arithmetic by increasing the sagacity of mind, would prepare it for the reception of geometry, with the assistance of which, should he one day be placed at the head of armies, he would be better enabled to mark out a camp, conduct a siege, arrange troops in order of battle and direct their motions with more facility on a march or in an action. Astronomy would serve to guard him against the panic of terror with which the soldiers were often seized at the sight of eclipses and the extraordinary phenomena of nature.

Plato, who wrote the first treatise on education, emphasises the fact that worthy, strong children spring from strong, worthy parents. He taught that the beautiful is allied so closely with the true as to be indistinguishable, and the mind that has been trained to contemplate art is that calculated to grapple with the difficult problems of existence. Youth was to be instructed in swimming and in the rudiments of literature. They who were poor were to be taught husbandry, manufactures, and trades; but such as could afford a genteel education were to learn music, philosophy, hunting, and gymnastic exercises. The precise age at which children were to receive public lessons, the characters and talents of the masters who were to instruct them, and the preceptors who were to attend them, were appointed. He was reckoned infamous who beat his parents or did not maintain them in their old age. Children were brought up to treat them with deference and respect, not scorning such humble offices as washing and anointing their feet. They saved their money so as to maintain their parents in old age, and even employed some of their friends to look after them while they were engaged in any hazardous enterprise. A child who did not make provision for its aged parents was cursed and punished by the gods and often by human beings. Solon ordered that all persons who failed to make provision for their parents should be punished with infamy.

At the age of 7, the domestic education of the Spartan ended. At the head of the children was placed one of the most trustworthy men in the republic: he distributed them into different classes, over each of which presided a young chief, distinguished by his sense and courage. They submitted to his orders and to chastisements inflicted by rods without a murmur.

To accustom them to cold, their hair was cut off; they walked about without shoes or stockings, and sometimes exercised quite naked. Each company slept on top of reeds from the river, which they broke off with their hands, without employing any iron instrument. Certain youths when they were 20 were appointed to teach a number of other youths committed to their care. They led them when they swam, hunted, wrestled, ran, or engaged in exercises in the gymnasium. After partaking of a frugal, wholesome meal, their young leaders ordered them to sing, and engaged them in conversation in order that they might judge of their wit; those who answered carelessly were chastised.

Their diet was watched, and they were examined to see if they were disposed to corpulency, as this was considered a proof of luxurious indolence, and in order to guard against it, they were employed the greater part of each day in the gymnasium.

A most marked characteristic of the ancient Greeks was the strong religious or superstitious feeling which pervaded their daily lives. Those who were desirous of having children were liberal in making presents and offerings to the gods, especially to those who presided over generation. On the fifth day the infant was put under the protection of the household gods, the hearth being emblematic of the altar; and on the eighth or tenth day it was named, and sacrifices to the gods were made.

At banquets statues of the gods were placed on the table, and those present offered libations to them; thus to dishonour the tables at which the gods presided by indecent or irreverent behaviour was considered a great crime.

Special honour was paid to Jupiter, who, from the protection he afforded to guests and friends, was called the god of friendship and hospitality. Indeed, the Greeks were so convinced of the superintendence of the gods, that they thought it unlawful to eat until they had offered them part of their meal. The first oblation was to Vesta, who was the principal household goddess; and when they drank to their absent friends, they frequently poured some of the wine on the earth. This seems to have been a sort of adoration of the gods or prayer for their absent friends. At the end of every entertainment a prayer was offered and a hymn sung to the gods.

The Greeks, in this very religious or superstitious belief had the strongest of all guarantees for a good national physique, for they tried to please their gods by worshipping them with athletic contests. Thus the Olympic games were dedicated to Jupiter, the Pythian were celebrated in honour of Apollo, the Isthmian games were held near a temple of Neptune, and were said to have been instituted by Theseus in honour of that god; while the Nemean games were established by Hercules in honour of Jupiter. All these games, instituted in honour of the gods, or deified heroes, always commenced and ended with a sacrifice. If any one was conqueror in all the exercises, namely, leaping, running, wrestling, throwing, and boxing, he was considered superior to mortals, and the honours showered upon him extended to his parents, their relations, and to the city which gave them birth. Boys were allowed to compete in the foot race, doing half or two-thirds of the course, and the foot race was also considered a suitable gymnastic exercise for maidens, the length of their course being one-sixth shorter than that of the men.

Among gymnastic exercises the Greek physicians recommended the game at ball for strengthening the limbs, and developing the grace and agility of the body. Boys, men, and girls practised it. Dancing in the open air, especially chorus dancing, was greatly encouraged by the Greeks. Chorus dancing was in reality a sort of drill, and is often commended by their writers for its military advantages. Like gymnastics, the dance retained its original purity as long as public morality prevailed in Greece ; its connection with religious worship preserved it from being neglected or abused.

By reading aloud and singing, much more than we do, they kept their lungs sound. In fact, the general healthy mode of Greek life compensated for, and perhaps accounts for, their slow advance in medical science, which remained almost stationary from Hippocrates (in the time of Pericles, about 450 B.C.) to Galin (in the time of Marcus Aurelius, about 150 A.D.).

The absence of crowding, climatic conditions, and their school life compensated for the want of sanitary science. Great cleanliness was observed by them, and they used to bathe and anoint themselves and change their apparel frequently. Sea-water was considered strengthening for the nerves, and natural hot baths were highly esteemed.

It was certainly not the quality of the food they ate nor its quantity which caused the ancient Greeks to possess the marvellous physique displayed in the statues that have survived. The Athenians lived sparingly, for their soil was poor. "To live like an Athenian" meant to live frugally. In the primitive ages they drank water, and later the water of hot springs, and they also used much ice: indeed, in the primitive ages, men lived on such fruits as grew without aid or cultivation. At Argos the people ate chiefly pears; at Athens figs; in Arcadia and most other nations of Greece acorns were eaten.

Some ascribe the art of making and baking bread to Pan. Bread was made out of meal, salt, and water, to which some added oil. Barley meal was much used, while a dish made of rice, cheese, and eggs and honey, wrapped in fig leaves, was much esteemed; another favourite dish was a mixture of cheese, garlic, and eggs. The poor in Athens lived on garlic and onions. The first animal used as food was the swine. It was unlawful to eat oxen which were useful to man, and they were not killed for food until a much later period. The Greeks considered it wrong to eat young animals as tending to destroy the species, and because they had scarcely tasted of the joys of life; roasting was preferred to boiling. Nor were the Lacedemonians of later ages less temperate. They were accustomed to congregate and eight or ten men to eat together, chiefly black broth—a coarse sort of food. The poor often fed on grasshoppers and leaves.

The Greeks loved fish such as eels dressed with beets. Their sweets consisted of apples, almonds, nuts, figs, and peaches; while the Spartans whose diet was sparing ate meat, hares, partridges, and fish. The heroes often dressed their own food, and sometimes the heralds employed in civil and military duties performed many of the holy rites at sacrifices, serving as cooks. Part of the education of the Spartan boys, after the Spartans commenced to drink wine, was to be occasionally shown a drunken slave at their banquets. This was done with the purpose of making them disgusted and preventing them from drinking to excess themselves.

These facts prove that a perfection which was attained hundreds of years before Christ, should not be unattainable by a nation such as ours, whose sons are imbued with courage, ambition, and endurance, if only given the means of improving their physique. This will only be done by teaching; by giving them some ideal to live up to; and by making them feel that the nation is one great living body of whom they are a part.

CHAPTER XI

SYSTEMS OF PHYSICAL EDUCATION

> *"I never could have done what I have done without the habits of punctuality, order, and diligence, without the determination to concentrate myself on one object at a time."*
>
> DICKENS, "David Copperfield."

The Effect of Exercise. The Conditions requisite to a good System of Physical Culture. The Swedish System. The German System. The Swiss System. The French System.

SYSTEMATIC physical training of children was introduced in the elementary schools in Great Britain long after schemes had been carefully worked out abroad. In making our own plans, therefore, we have had the advantage of studying the methods enforced in other countries, and of taking warning by their failures as well as of profiting by their successes. Before describing the systems generally followed in this country, it will be desirable to give a short account of the methods employed in the principal foreign countries.

Children and all young animals when allowed absolute liberty are always in movement except during sleep: a quiet child generally means a child out of sorts. Movement is necessary for proper growth and development, and, apart from its irksomeness, to keep a child sitting quiet and confined for long periods, has an injurious influence on health and normal growth.

It is not necessary to dwell here at any length on the beneficial effects of a healthy amount of exercise, a subject fully discussed in works on physiology and hygiene. It will be sufficient to recall that exercise improves the nutrition, not only of the muscles themselves, but of all other organs; it stimulates the action of the lungs, increasing the intake of oxygen and the output of carbonic acid; it accelerates the action of the heart, and both in this way and by hastening the passage of blood through the muscles, aids the circulation; indirectly it favours digestion, improves the appetite and the nutrition of the nervous system, and quickens the operations of the mind. Finally, the discipline of drill, gymnastics and games, has an excellent moral influence. There is, however, one effect of regular healthy exercise in the young not so generally recognised, which is of special importance to the present discussion. It is well known that a muscle not sufficiently used wastes: the shrunken limbs of a man who has been long confined to bed show the general effects of want of use, while the wasting of a leg which has been kept in a splint for some weeks affords an example of the effects of disuse of a particular set of muscles. With moderate exercise in such cases the muscles quickly grow again, and the natural form of the limb is restored.

It needs no argument to prove that in childhood a healthy amount of exercise is essential to normal growth, not only on account of its indirect influence on the heart, circulation, chest, digestive and nervous systems, but also for its direct effect on muscular development. It is not perhaps so well known, that during the period of growth, muscular action influences profoundly the development of the bones. The bones of the child are constantly growing in length and thickness, and they are, as it were, moulded by muscular action. If the muscles are feeble and little exercised, the bones tend to be thin, slender, and ill-developed, and yield more readily to any cause tending to produce deformity.

Well regulated exercise, on the contrary, stimulates the growth of the bones, makes them stronger, ensures their assuming their normal form, and preserves the symmetry of the limbs and trunk. Confinement for long hours in school, unless counteracted by a good system of physical exercises regularly carried out, may therefore have an injurious effect not only on the muscles but upon the bones. It is not to be expected that the children will always sit in a "model" position. Desks are not made to the measure of each scholar, and there is the chance of their having to bend over or stretch up to excess. In leaning forward chests become contracted, circulation and respiration are interfered with, spines are curved, sight injured and headaches acquired.

An ideal system of physical culture can never be attained unless physical exercises, drill and games are all included in it. They must be done intelligently under competent teachers, frequently and regularly. There is room for diversity, but whatever the system adopted, it should aim at undoing the evil caused by school. It should be designed to expand the chest and straighten the figure, while a few swift exercises should be given to quicken the circulation and revive the spirits. Careful consideration should be given to the effect of each exercise on the symmetry of the body. This is where many systems taken in bulk fail, and why it is wise to invite specialists to use their reasoning powers in selecting exercises from each system. Another important point is the avoidance of monotony in the exercises: once allow a child's attention to wander and all the good of the lesson is done away with.

This is why the Swedish system, taken as a whole, may be open to criticism; perhaps very young children, when they begin as early as 6, are not conscious of the monotony, but as they grow older the system palls upon them, for it is compulsory up to the age of 25, and never changes in character.

When it is realised that there are no less than 2500 different movements in the system, it seems difficult to imagine the possibility of its being monotonous: still that it is so is everywhere admitted.

The value of the Swedish system lies in the fact that their first consideration is for the vital organs: no exercise is allowed to be done which interferes with the respiration. Breathing exercises are constantly given, and in every movement the heart and lungs are considered, and perfect balance aimed at. The result of this is that the muscular system is evenly developed, one part of the body not being overworked at the expense of some other, perhaps insufficiently exercised, as in the German and other systems. Possibly the appearance of stiffness in the

Swedes, commented upon by witnesses in the Royal Commission on Physical Training (Scotland), may be due to their being trained to hold themselves upright and never to slouch. Slouching, according to them, is incompatible with personal dignity, and a body well under control, increases mental force and gives self-confidence.

Why should physical culture be regarded in the light of an enjoyment any more than mental culture? The aim, in proper physical exercises, is to get the brain to govern the body; not merely to be able to do certain exercises mechanically, but to aid nature in the developing of a perfect body by obtaining absolute control over that body. The first position in a class of Swedish exercises is an ideal one, and the child is expected to return to the ideal position after each exercise.

If enjoyment and brain rest are aimed at, turn the children out into the play-yard for a quarter of an hour, and let them laugh and romp and scream to their heart's content. And if the time-tables are too full to permit this without missing out some lesson, in the name of common sense cut it out of some of the useless subjects crammed into them, rather than turn physical culture into a musical display of meaningless movements, executed by children whose brains are expected to be left behind in the schoolrooms.

Englishmen are supposed to call a spade a spade, and should therefore be careful not to call "Swedish" a system from which they have wilfully or stupidly eliminated the most vitally important points. Thus, a most striking feature is the intelligent habit of measuring, weighing and examining, without their clothes, all children attending schools in the presence of two doctors. This is done at the beginning and end of each term, and careful records are kept of the results. As a consequence, it is possible to watch the physical progress of the strong and to single out the unfit who are all put together, and, in a separate batch, given physical exercises suited to their strength. This sensible plan is attended with excellent results in many cases of deformity, and is worthy of every praise. In addition to the exercises in the regular code, it is customary to give the children a few quick movements during school hours: this is with a view to resting the brain and changing their thoughts.

The Swedish system, above all others, is one which must be well taught by energetic and competent teachers for that very reason of monotony. Taught mechanically by a slack teacher no good results will be obtained.

What our class teachers, whether slack or alert, are considered competent to teach after twenty-five lessons of half an hour, takes in reality years of incessant training to accomplish by expert teachers. It has to be taken into consideration that the Swedish character differs from the English, and that methods suited to one temperament and climate may not have the same result when bodily transplanted and worked in another. The Swedes have an abhorrence of anything in the shape of show or public display; they are conscientious and would never rest satisfied until they had done their very best. Does this apply to us? That the system can be adapted with splendid results in this country has been proved by the report of the work done at Dorchester school (Southfield) lately published. Before quoting the report, it is necessary to mention that the teacher of physical exercises in the school reported from, was trained at the Swedish Training College at Dartford in Kent. The course there lasts two years, during which the most complete training is given.

This is an extract from the report by the Examiner on Dorchester school (girls):—

"I am happy to be able to give a most favourable report of the school as a whole. It is especially gratifying to be able to state that the weaknesses I spoke of last year, as existing in the school's work all through in a more or less degree, weaknesses of carelessness, of vagueness, and of incipient listlessness, have now been completely eradicated, and I can find no further trace of them whatever. This result, which I am thankful to be able to record, I assign to a combination of causes, but in no small degree to the wholly admirable physical training on the Swedish system so splendidly given during the past year by Miss Bilberg. The value of such exercises depends very largely on the character of the teacher. Miss Bilberg would make any pupil energetic and alert. That she has done a great work for the school even in one year, there is no doubt whatever. And I may add, in order to remove any doubts that may exist in the minds of any in regard to the effect of such a course of gymnastics on delicate constitutions, that the very greatest care is taken to allow none but the normally strong to enter for the course, and that in class the very greatest consideration is shown for all, and especially for the younger and less active pupils."

The German System.

Whereas the Swedish exercises are given with a view to loosening and making supple the joints and to obtain perfect balance, the Germans aim at developing the muscles, and for that purpose have large gymnasiums fitted up at one end with apparatus, the rest of the hall being used for the military evolutions which figure so conspicuously in their training. On fine days apparatus work is done outside. Although the system is compulsory, the monotony experienced in the Swedish system is not so apparent, the exercises and apparatus being as varied as possible, so as to induce the pupils to continue to adult age.

Resistive force is at the bottom of everything: something to grapple with in view of facing the possibilities of life, something in the hand—such as a dumb-bell or a wand. They use complete apparatus, ropes to climb, ladders, and so on. Antagonistic work, viz., tugs of war, wrestling, pushing each other, is supposed to develop antagonism between individuals. The objections which may be set against their system, is that the Germans work their children with apparatus at much too early an age when their muscles are not ready to stand resistance. The consequence is that over-development of the shoulders, shoulder-blades, and biceps, and the insufficiently developed legs, so noticeable in the sons of the Fatherland.

A medium English team can always beat

them as they do not go in for athletics, and consequently their hips are large and their legs thin.

Great stress is laid on the necessity of using the left hand, and all their exercises are alternate, such as right hand up, left up; left out, right out; right forward, left forward. It is believed that a man thus trained, will get through more work in after life than a merely right-handed man. It is said that there are English firms which give more pay to a man able to use his left hand as well as his right, because he can get through extra work.

A register is kept in each town, and civilians are expected to come to the gymnasium once a week, up to the age of 30. This excessive training, combined with conscription, causes every German to run into flesh when he is about 30, and after that period he cannot be induced to take exercise. A very noticeable feature of German gymnasia as compared to our own, is the want of discipline and good behaviour among the students, and often the noise and inattention are so bad as to greatly interfere with the lesson.

Whereas we left the Swedes, according to Mr A. Alexander in his evidence before the Royal Commission on Physical Training (Scotland), "effeminate and stiff," we abandon the Germans, protuberant and short-necked.

Physical Training in Switzerland.

The Swiss take their physical culture less sadly, and seem most merry doing exercises to the accompaniment of Tyrolese songs which they sing in a most spirited manner.

Some specialists contend that a musical accompaniment to physical exercises tends to make the attention wander; others, on the contrary, think that this is a good thing, as it rests the brain while exercising the limbs. This seems to be borne out by the fact that soldiers march more smartly to a band, and that it is scarcely conceivable that even the most enthusiastic débutante would care to dance until four o'clock in the morning without the inspiriting accompaniment of music. That it does not destroy skill and activity is proved by the results of the Swiss system. Here variety is aimed at, and is got, by the provision of great variety in their drills and a fair amount of variety in their apparatus.

In order that they may become skilful, children are taught to work out gymnastic problems by means of apparatus; they are fond of high jumping and vaulting over the horse; but they do not come up to the English in agility.

By some the Swiss are considered to be physically a better race than the Swedes, and to have a much better figure than the Germans. This latter is a doubtful compliment, while the first is an opinion with which it is not easy to agree. Physical training in Switzerland is under municipal rather than federal control. Each municipal body provides its own large gymnasium, appoints its own teachers, and frames its own rules. There is one national society with which all local bodies are federated, and every year they have a very large fête similar to the Swedish Gymnastik Festen; it is held either at Geneva or Lucerne. At this festival as many as 100,000 at a time go through evolutions. In the children's schools the principal apparatus used is a wand, and with this they go through various physical movements and slight free movements.

In the case of those in whom any particular muscle needs to be specially developed, the lesson is given without music. It is sometimes argued that the high rate of heart disease in Switzerland is attributable to the use, by the elder boys, of too heavy staves while undergoing the training.

The French System.

Physical exercises in France are under Government supervision, and although based on the English system, they incline to what is known as the military system which includes marching and formations.

Their exercises were remodelled about ten years ago by Mr Sahe, who came over to England, and after what he saw introduced into France a certain course of dumb-bells, bar-bells, and light gymnastic work, which is called over there the Anglo-French system.

An attempt was made to introduce obligatory military drill with apparatus, and military cadet corps in the primary and secondary schools were created, known by the name of Bataillons Scolaires. But in spite of a brilliant beginning these were a failure and were gradually suppressed.

Their failure may be attributed to the cost, which far exceeded the results obtained, and to the fact that the children enrolled in these corps affected the manners and language of the drill sergeants, and even in the playground talked barrack-room slang, until it became impossible for teachers to tolerate the system. Besides it was recognised that the too early specialisation for the child was a bad preparation for the recruit. Private societies succeeded those; they introduced a system for the formation of muscle by exercises done with apparatus.

Finally, the *gymnastique raisonnée* has superseded other systems. It has, as a basis, the Swedish system, while British games and sports are being widely introduced into France.

CHAPTER XII

PHYSICAL CULTURE IN ELEMENTARY SCHOOLS

> *“Le travail du corps délivre des peines de l’esprit.”*
> LA ROCHEFOUCAULD.

The London System. Description of the Exercises. Dress for Drill and Exercise. Instruction of Teachers. Exercises for Delicate Children. Systems followed in Birmingham, Manchester, Leeds, Bradford, and other Towns.

WE now come to the question of physical culture, which has been exercising the minds of those concerned about the national physique, as bearing on the question of recruits for the Army and Navy. The class from which these are drawn are chiefly the children of labourers and artisans educated at public elementary schools. We will describe the system carried out in boys’ schools in London under the general superintendence of Mr Thomas Chesterton, organising teacher of physical exercises for the London School Board. It was only in 1889, nineteen years after the establishment of the School Board, that physical exercises were made a compulsory subject for boys and girls. All teachers in the service of the School Board are expected to qualify in order that they may drill their own classes. This is considered desirable, for although their teaching may be inferior to that of experts, the personal influence of class teachers over their pupils, and the knowledge they have of their physical strength, are believed to compensate for the extra skill of the professional. By way of introducing physical training into boys' schools, instructional classes for teachers were formed, and the Swedish and English systems were taught; but later, the English system arranged by Mr Chesterton became so much more popular than the Swedish that the latter was allowed to drop. An assistant trained at one of the classes was appointed to assist him by superintending the instruction in the schools of North London. While Mr Chesterton does not claim to have originated the entire system, he may be credited with having himself classified and adapted a series of useful exercises, after a careful and practical test of the different methods in use in other countries of Europe, a task in which he tells us he was guided by twenty years of practical experience in teaching physical culture.

The classification of the exercises is based on a study of anatomy and physiology, and is designed to encourage general development. Many foreign systems aim only at "setting up" drill for military purposes, and this has invariably been found a failure when tried in this country. Since there is often no space for games in London, physical exercises are of the first necessity, and in order that they may not become irksome they should be varied as much as possible. For this reason music is sometimes used, and it is quite remarkable how many of the children, often quite young, can play the piano, keeping excellent time, and changing tunes to suit the exercises. Often the children of the poorer classes play quite as well as those of the rich, their parents having paid for a piano on the hire system. In every class all children who are musicians come forward to play with a graciousness and want of false shame which would do credit to many a well-born child. Generally, however, the drill is taught without music, especially at first, until the pupils are quite sure of the exercises.

The system aims at general or all-round development, and the exercises are adapted to the requirements of the average pupils. In a vast concourse of over half a million it is obvious that it would be impossible to give special movements for special cases; that is the reason why class teachers are selected to drill their own class, as they are presumed to know the weakly ones, and to put them in the background where they follow as best they can. This, of course, is not ideal, more especially as the weakly ones are more often than not those who need the exercises most, and probably special ones. Perhaps under the new educational authorities it may be easier to look into this matter and give more attention to the most physically unfit.

It is satisfactory to know that in the ordinary teaching nothing is introduced for show or display, but merely for its effect upon the principal muscles and articulations of the body. The exercises are progressive, according to the standard in which the child happens to be, and none are so complicated as not to be readily learnt. They are arranged as follows :—

Commencing positions of the upper and lower limbs.
Head movements.
Arms raising and swinging.
Arms bending and stretching.
Trunk movements.
Trunk and arm movements.
Leg and hip movements.
Leg, hip, and arm movements.
Side lunging.

Direct lunging.
Side lunging with arm movements.
Direct lunging with arm movements.
Balance movements.
Shoulder movements.
Shoulder movements with direct lunging.
Exercises when on the march.
Marching in various formations, and figure marching.

It is believed that these movements gradually bring into play every muscle and articulation in the body, and that the children, by learning to do the simple movements correctly, are laying the foundation for the performance of more advanced ones. A teacher conversant with such a system can teach without constant reference to a text-book. Further, as the exercises are grouped in progressive order, the necessity for tables of exercise is obviated, teachers being able to select movements suitable for their classes, according to the circumstances under which the instruction is given, viz., time of day, weather, and whether indoors, in a hall or corridor, in the open air, or under a shed.

Many of the Board Schools have a hall in which drilling can take place, and where such a hall does not exist, and where class-rooms only are available for the purpose, the School Board is gradually building special halls. These new rooms are spacious with plenty of windows for ventilation, but it is noticeable that some head-masters prefer the drill to take place in the school-yard in dry weather or under a shed, usually to be found in the yard, provided the weather is suitable. This excellent plan cannot be too highly praised and encouraged.

The exercises may be taught in several different ways: as free movements by word of command, they can be performed by the elder children with dumb-bells if desired; or the whole may be performed, with or without dumb-bells, to music, any tune in simple or common time being all that is necessary. It is curious to note that when two or more classes occupy the same room, one class may perform the exercises as silent drill without in any way interrupting the work of the others.

Boys and girls dressed in ordinary clothes can perform the movements with equal readiness, although it is a pity that there should not be a distinctive dress for the girls, and in particular special shoes for all. In one or two of the higher grade Board Schools, the girls wear dark blue frocks with smart red collars and sashes and drilling shoes, and the difference in their appearance (of course they are better in other ways too) is quite marvellous, they look so smart and business-like. Surely if one Board School can accomplish this, others, perhaps all, might do the same. A piece of coarse blue serge and another of red for facings would cost next to nothing, and the girls could make the gowns at their sewing classes. The School Board ought, where necessary, to provide flat shoes if the drill is to be successful. How can children in boots down at the heel and often sizes too large for them succeed in doing foot and leg movements perfectly?

The children are taught to assemble, to form classes, and to move from one point to another quietly and in orderly manner by a sort of drill adapted from that in the Infantry Drill Book. This is useful as instilling into boys the elements of military drill; later when they leave school it encourages them to join boys' brigades and eventually the Army. For the sake of discipline, in schools where there is sufficient space in the playground, the children are made to assemble, marching from the class-room into the playground in a methodical manner. This is in a great measure to keep up discipline in case of a panic caused by fire or any other accident. Its usefulness has been demonstrated lately when, during fires, the children were marched out of the school-rooms in an orderly manner, no accident occurring. It also assists obedience and orderliness, and makes the children punctual, and is another reason why it is thought desirable that each teacher should drill his or her own class: they are supposed to maintain better discipline than a stranger could. Indeed, the school discipline is very good, and a class seems to move like one person. Though this must tend to crush out individuality, yet, in a motley crew, where a large number of subjects have to be taught in an absurdly short space of time, nothing short of rigid discipline could accomplish a task so Herculean.

Instruction of Teachers.

Classes for male and female teachers are held after school hours; they last one hour and take place once a week for twenty-five weeks. At the classes for males, all the exercises contained in the manual (a copy of which is supplied to each boys' school) are gone through. The essentials of physiology and hygiene, bearing on the theory of physical education, are included in the instruction given at the training classes, the instruction also including muscular development; effects of exercises on heart, chest, lungs, and circulation; air and ventilation; food and clothing; skin and its functions; games and swimming; effects of respiratory movements; spinal curvature; injurious positions assumed during school life; and rules for conducting the lessons. At the termination of the course, the teachers are called upon to undergo two distinct examinations, one in theory and the other in practice. The practical examination consists in each teacher performing exercises at the word of command from the instructor, and in drilling a class of adults in presence of the examiners.

Until within the last few years, the theoretical examination consisted in answering on paper a few questions connected with the physical education of school children. But now each teacher, male and female, in addition to the practical, must pass a theoretical examination, which involves a comprehensive knowledge of physiology and hygiene far beyond what may be considered necessary, before he or she can obtain a certificate of competency to teach physical exercises in schools. A teacher, possessing advanced certificates in physiology and hygiene, may claim exemption from this examination, but the possession of both is indispensable in order to obtain the concession. When a teacher has passed the theoretical as well as the practical examination, he or she is granted the certificate. A teacher, male or female, does not obtain an increase in salary in accordance with the scale, unless in possession of the above certificate. A pass in either part of the examination is credited to the teacher, but the certificate is granted only on a pass in both parts being obtained. Still, successful or not, those who have passed the practical examination, yet not the theoretical, have to teach their class physical exercises, although the annual increase of salary (£5 in the case of men, and £3 in the case of women) is not allowed.

The examiners of the practical and of the theoretical subjects are different men. It does not seem absolutely necessary for teachers of physical exercises in Board Schools to be obliged to obtain the advanced certificates in physiology and hygiene of the Science and Art Department, or to undergo an examination equivalent to that held by that Department, before being considered worthy of a certificate to teach physical exercises, although their practical knowledge — which is by far the most important—may be of the highest order. It is therefore curious that a Board School teacher, who is permitted to instruct a class in physical exercises, and is presumably thought fit to do so, perhaps for several years—for teachers who have failed are allowed to go in for the theoretical examination year after year —should be deprived of extra salary the while.

Unsuccessful candidates do not learn why they have failed in the theoretical examination, for their papers are not returned to them nor are their mistakes pointed out. Great discouragement is produced among teachers who have failed and yet have to go on giving instruction: it is no wonder that they do their work in a half-hearted manner, lose interest in the physical training of their class, and that the children in the class suffer.

The examination should be confined to the theory of physical culture in connection with practice, while outsiders, preferably medical men, should be the examiners. Let hygiene and physiology be taken by all means but as separate subjects, and not to act as dampers to the zeal of the unlucky men and women, possessing perchance the gift of teaching exercises, but unable to grapple with scientific subjects learnt at the expense of their leisure and recreation at evening classes, when they are far too tired to take in what they are required to learn. This applies to male and female teachers. If the physical training is to be successful (when undertaken by the teacher, which is the only way it appears it can be conducted in the schools) it must be popular.

The girls who are taught solely the Swedish system might, with advantage, have brisker exercises into which they would throw more energy. In some classes especially it is noticeable that they seem slack and listless. This depends greatly on the teacher, and among so vast a concourse the slack as well as the energetic are bound to be found. The Board's instructors visit both boys' and girls' schools periodically, in order to see that the classes are properly taught and to advise teachers, to wake up the phlegmatic, and to assist those who have to fight against difficulties, such as the want of halls in which to drill their classes.

The teaching of the girls is progressive, the exercises gradually increasing in difficulty from Standard I. to Standard VII. It is needless to give in detail the course taught, as the Swedish system is so well known. As a rule no apparatus is used, the whole of the exercises being free movements, though of late years the girls have followed the example of the boys and in numerous schools are now using both dumb-bells and wands. Skipping is taught as being a good exercise for the development of the lungs, and during the summer swimming is encouraged. Each class under the School Board, both boys and girls, drills three times a week for twenty minutes. It is to be hoped that it may soon be found possible to give them twenty minutes every day, or even more time. None of the exercises are violent, and as long as they remain such as not to overtax the children's strength, there is no fear of their being hurtful to them, unless through their insufficiency, or to those suffering from any particular deformity or disease which might necessitate special exercises under medical supervision.

Delicate Children.

In dealing with a huge mass of children, it is necessarily difficult to separate completely the robust and the delicate. But when there is regular medical supervision of all the children, it will be advisable to hold say, one class a day for special exercises, which all the most physically unfit in the school could attend, the work being regulated to suit their strength.

The teaching of swimming cannot be too highly commended. Apart from utility, in case of drowning emergency, it is invaluable in strengthening the lungs, and when done in cold water, in developing the limbs; if judiciously taught it gives courage and confidence. At first girls were timid, but now it is extremely popular with both girls and boys, and many of the former have become splendid swimmers. We are glad that a great number of teachers encourage outdoor games among the children attending Board Schools. No doubt most of the playgrounds are small, and the space for such games as cricket and football cramped. But they play somehow, and on Saturdays boys may be seen on commons, and in fields and parks, enjoying outdoor sports and games.

Attention has been particularly directed to what has been done in this respect in London, partly because the problem has had to be faced there under specially difficult circumstances, owing to the density of the population over so wide an area with few open spaces, and partly because the London system has been used as a model for other centres.

In some instances, indeed, the provincial cities have bettered the instruction. In Birmingham the regulations provide that, at the commencement of afternoon school on four days a week, fifteen minutes must be given to physical exercises, and on one day forty minutes. The exercises consist chiefly of formation, marching, running, the maze, and free, dumb-bell and Indian club exercises. They are not allowed to take the place of a run between lessons, and it is impressed upon the teachers that they are quite distinct from recreation. The exercises for boys and girls differ slightly, and there is a certain amount of variety on different days of the week.

In Manchester a very excellent system of physical exercises has been worked out by Mr William Clark, the organising teacher, who has drawn up a *Manual of Physical Exercises* for the guidance of teachers, which is published by the Education Committee. The system is founded partly upon the well-known Swedish exercises, and partly upon the free exercises used in the girls' and infants' schools of London.

In Leeds the system includes evening classes for teachers to ground the teaching staff in the various movements, thus to enable them to train their own scholars efficiently. The training of children in elementary schools by the teachers and the training of children in higher grade schools by special instructors is included. For the high grade classes a gymnasium is provided.

In Bradford the syllabus of physical exercise and drill is very well and clearly arranged to suit the powers of children in different standards. Stress is laid upon the importance of holding the classes in the playground whenever the weather permits. The practical suggestions which Mr H. F. Pearman, Superintendent of Physical Exercises, has prefixed to the detailed syllabus are so excellent that they are reproduced in an appendix.

Similar systems have been adopted in Huddersfield, Wolverhampton and other large towns, and it may be said generally that the local educational authorities of such towns are far more alive to the importance of making physical training a routine part of elementary school teaching than was the case a few years ago.

Some educational authorities have developed manual training classes to a high pitch of perfection, and such classes may be held to supplement systems of physical exercises and drill. For example, in Birmingham each boy in Standard V., VI., VII. attends manual training instruction once a week for one and a half hours, and must give half an hour a week to drawing. "The aim," as is well said, "is not to get the most actual work out of the pupils in making models, or training the children to be carpenters or engineers. It is to teach them in all they do, to have and to use correct methods, to be skilful, neat, and accurate with their hands, and to let thought and reason, in all their undertakings, precede and guide their actions." Practical instruction is given both in woodwork and metal work, and short theoretical lessons on the uses of tools. In Manchester manual training is given with the same objects in view, and at the Central Municipal School all the scholars, both in the science and elementary boys' departments, pass through a graded course of instruction under special teachers.

In the preface of a book by Mr Chesterton, entitled *Organised Playground Games* (suitable for elementary and secondary schools), is pointed out that games, physical exercises, and drill are all three essential to the all-round development of children, no single form being sufficient for an ideal training. The author says, "drill is indispensable in securing discipline, and a ready response to orders; systematic physical exercises provide beneficial training for all parts of the body, and aid in attaining that 'set-up' which is so essential to giving to children a smart carriage; while from games, a great amount of physical and mental benefit is derived." He rightly contends that a boy's real character is manifest while he is at play, and by watching him his master can form a good estimate as to whether he is likely to develop into an energetic and self-reliant man. The moral benefit of games is beyond all doubt. A boy who plays fairly will probably be honourable and fair all his life long, and he will turn out more manly and self-reliant than the boy who has never joined in sports. Open playgrounds and parks should be secured as often as possible for children condemned otherwise to play in slums and alleys as best they can.

Now that tramways and trains run so frequently into the suburbs, every effort should be made by benevolent societies to assist schools to take cricket and football teams to play in green fields or commons; small school funds might even be raised for the purpose. The physique of the children would be considerably benefited by the exercise and change of air, which would be beneficial also to teachers accompanying them. In Germany games are taught in schools. Generally, a large playing field is secured, and twice a week the classes assemble and are taught by their teachers a great variety of games. They are not to be held up as models of their kind, and it is, for instance, easy to imagine an English boy having the megrims from horror at German football; but the idea is good. Teachers are paid extra for teaching and taking part in the games, and therefore enter into the fun with a light heart. It is a Herculean task to provide ideal education for about fifteen hundred school departments containing over half a million pupils; but when the Board Schools are handed over to the new Educational Authorities, we much hope that the separate districts will have it in their power to work each batch of schools as perfectly as possible.

As a matter of fact it is hardly correct to call the system we employ the Swedish system, as the most important part of it is left out. In Sweden all school children are measured and weighed, and are medically examined with their clothes off at the beginning and end of each term. Records are kept which are of the greatest value in noting the benefit or injury done to the children from physical exercises. Besides this, the weakly or physically unfit are weeded out of each class, and formed into a group where special suitable exercises are given.

CHAPTER XIII

THE TEACHING OF DOMESTIC SUBJECTS

> *"Unquiet meals make ill digestions."*
>
> SHAKESPEARE.

Cookery Classes in London. Household Management. Cookery and Housewifery Classes in Birmingham, Manchester, Bradford, and other Towns. Cookery Classes in Elementary Schools in Germany.

IN London there are 352 centres of instruction at which children from the surrounding Board Schools attend to learn domestic economy. In some intances the schools are arranged in groups of three, each giving a different branch of instruction, but the courses are practically the same at all. There are 183 cooking, 141 laundry, and 28 housewifery centres.

The children in attendance number upwards of 45,000, their ages varying from 11 to 14 and 15 years. In some districts parents are letting their girls remain rather longer at school in order that they may attend a housewifery centre.

The whole scheme of instruction covers a period of three years. For two years the child attends cookery and laundry centres, and for one year a housewifery centre. In districts where there is no housewifery centre the girls attend the cookery and laundry centres for another year, the third year's course being more in the nature of household management than pure cookery or laundry work.

Special teachers are appointed, who must have diplomas for cookery and laundry work obtained from a training school recognised by the Board of Education, and obliged, within a reasonable time, to obtain a teaching diploma for housewifery recognised by the Board of Education, a certificate of the South Kensington Branch of the Board of Education for advanced hygiene, advanced physiology, and elementary chemistry, and a certificate for first-aid to the injured.

The salary for teachers of any branch of domestic subjects (cookery, laundry work, or housewifery) is £70 per annum, rising by annual increases of £3 to a maximum of £112 per annum.

The number of children attending a class must not exceed 14, except with first and second cookery courses, which may contain 18.

Each child is taught separately. In Germany they are taken in groups of four. Our system gives four times the trouble to the teacher, but perhaps, although it is doubtful, the results are better for the child.

Two classes are given daily, the one from 9 A.M. till noon, and the other from 2 P.M. till 4.30 P.M. The teacher first explains the ingredients and quantities required for the dishes about to be cooked, and tells how the children are to prepare and mix them. This demonstration takes place in a class-room with desks, and the instructions are clearly written upon a blackboard. The children next proceed to the kitchen where everything is in readiness. A narrow wooden counter forms a square in the centre of the room, gas stoves with ovens and cooking rings being let in on either side, while cupboards form the under part of the tables. The children stand round this outside, while the teacher remains in the inner space (much like a counter in a shop) and overlooks them. Round the outer part of the room are sinks equipped with tubs and brushes to wash vegetables, etc., and the vessels after use. Cupboards with shelves and drawers are provided for storing the utensils, knives, forks, spoons, etc.

Such stores as keep well are provided once a year, from a central storehouse belonging to the School Board, while the children are sent out shopping for perishable supplies such as meat, vegetables, butter, and eggs. This is an excellent plan, as they thereby learn practical housekeeping, how to select good materials, the use of money, and the proper prices of food. On this point the London system is superior to the German, but it is decidedly inferior with regard to the equipment and neatness and spotlessness of the kitchens. There the saucepans are all of enamel, the washing-up pans shine like silver, and the tables are snowy; and, be it understood, in Germany every bit of the washing up and scouring is done by the girls themselves. Here "kitchen cleaners" are provided, whose duties are :—

"To scrub the floor of the centre twice a week. Thoroughly scour such utensils as cannot be cleaned by the children.

"To keep the stoves clean and bright and sweep the flues once a week. Wash up dishes, etc., used for the dinners. The children will wash up those used for the lessons.

"To order and fetch materials required for the lessons. Light the fires at 8.30 A.M. for a morning lesson, or at 1.30 P.M. for an afternoon lesson, if a morning lesson is not given on the same day."

It would be wiser to train the children themselves to scour kitchen utensils, keep stoves bright and clean, wash up dishes, light the fires, and so on, matters indispensable to them in their future lives. In the laundry centres kitchen cleaners sweep the room, fill the copper and light the fires, scrub and clean the floors, and clean the hearthstone, etc. They must also "thoroughly scrub and clean the floor of the class-room at least once in three weeks!" In Germany the demonstration and the lessons are given in the same room, and the floor of the room is scrubbed by the children every day. It is fair to say that in that country the pupils, although of the very poorest class, were all spotlessly clean and neat, their hair brushed and combed and neatly tied back. As much cannot be said for the same class attending the cooking centres in London. This makes it very hard for the teachers, who complain that in some districts the state of filth in which the children are sent from home is indescribable. As one of the teachers remarked: "We can't refuse to teach them, for the dirtiest ones have the worst mothers, and require it the most." It is pathetic to be told that many of the teachers in the schools are glad to buy the dinners cooked by these children, and that the cooking mistresses are obliged to dine off dishes over which, in the preparing of them, these children have been bending.

The pupils are not allowed to eat what they cook, but they may buy the food and take it home.

It would be well even in the simplest cooking to instil nice ideas of finishing off dishes and serving and garnishing. It would help to refine them and make them natty in their homes. Here is an instance: some little apple tarts were being made; the pastry was just put on the top and cut roughly round the edge of the pie with a knife. It would have been easy to raise it with a small cup (not to speak of the juiciness which would be the result), to ornament it with a top-knot of pastry, and with the top of a spoon held with the hollow portion downwards, to go round the border making a series of shell-like patterns. Like politeness, the small refinements of cooking cost nothing. A great variety of small cheap dishes are taught, and the recipe of each is written out after the practice lesson. In London the prices of the articles used in the recipe are not shown, and this seems a lost opportunity of instruction. A useful lesson is given on portable dinners.

Each child is given marks for regular attendance, and if a good record is obtained at the end of the course, she receives the School Board Cookery Book. No prize appears to be given for special merit or skilfulness, which seems a pity, as the children are taught individually.

In the third year, in districts where there are no housewifery centres, the instruction given in the classes is more in the nature of household management than pure cookery or laundry work. Among the subjects are—apportioning of income; a simple form of keeping accounts; a dinner for six not to exceed 2d. per head; the drains of the house; the water supply; lighting, etc. In the laundry course the theory as well as the practice is taught. The girls are allowed to bring suitable garments from their homes to be washed at laundry centres, and for this no charge is made. A certain number of clothes are supplied also by the Board for the purpose of practice. The laundry class-rooms are fitted up with all the necessary appliances, such as copper boilers, mangles, ironing tables, lines for drying the clothes, stoves for heating irons, and so on.

The housewifery centres instil into the children a proper idea of home life. In as many as possible there is a kitchen, a sitting-room, and a bedroom. They learn to dust, sweep, and cook; they are taught to trim a lamp, to wash paint, and to nurse in a sick-room. A real child is put to bed, and sheets and nightgown are changed without lifting the patient from the bed. Instruction is given also in personal hygiene, invalid cookery, and many other useful subjects. Occasionally a real baby is borrowed, and a lesson on washing, dressing, feeding, etc., is given. But this is rare, as the responsibility is great in case of an accident happening to the infant. The elements of dressmaking are also included in the course. The pupils are very interested in housewifery, and, indeed, in all domestic subjects; and it is to be regretted that more time cannot be devoted to these classes. Each child attends once a week.

In other large cities in England classes in domestic economy have been organised. In Birmingham one lesson, which is illustrated by specimens and apparatus carried from school to school in a handcart, is given weekly by the science demonstrator or his assistant to girls in the fifth and higher standards. This lesson lasts from three-quarters of an hour to an hour. An ordinary teacher, who has attended the demonstrator's lesson, gives one lesson weekly and holds a written examination. The full course extends over three years. In the first year elementary facts with regard to physiology, food, and clothing are taught; in the second year the lessons deal with the composition of food, and the warming, cleaning, and lighting of the dwelling; in the third, with cooking, the laws of health and the management of the sick-room. In Manchester a number of schemes of instruction in cookery have been sanctioned, any one of which may be taken as the course for a year's work. There is also a course of instruction in the care of infants and young children. In Liverpool domestic economy is taught in all the provided schools, boxes containing the appliances being prepared at centres and sent to the schools in handcarts. The demonstrations last forty minutes and are given by special teachers or by assistant teachers who have attended classes at the centres and obtained a certificate. They receive special remuneration for this work, and in the intervals between the demonstrations they give two revision lessons: the whole course is divided into three stages. The classes are well attended both in the provided and non-provided schools, and a small number of pupils at the evening schools take up this subject. In most girls' schools animal physiology is taught, and is made the basis of instruction in hygiene. Elementary instruction in practical chemistry is given in the upper standards of many of the elementary schools.

In Bradford the teaching of domestic hygiene and management is very thoroughly organised. Both sexes receive instruction in elementary science. Simple lessons are given in physics, chemistry, and physiology, and in ambulance work, while there are special classes for girls in laundry work, and for boys in drainage and the disposal of refuse. The scheme of instruction in household management includes cookery, laundry work, and housewifery. The course in cookery is designed, not only to teach the best methods of cooking, but also the reasons of the processes employed, and it is impressed upon the teachers that the lessons, practical and theoretical, should be such as to be of service in the houses from which the children come.

The committees for Newcastle, Northumberland, and Durham, have combined to establish a school of cookery and household economy in Newcastle, where teachers in elementary schools can qualify for the limited diploma to teach cookery under the Education Code, and where girls and young women about to enter domestic service can receive instruction.

Attendance at domestic classes is not compulsory; but, as a general rule, the mothers are glad that their children should attend, and, in some instances, make sacrifices in order that they may prolong the course after the age of 14.

Many of the teachers in the domestic centres are ladies: their example alone should have a refining influence, and should do much to teach their pupils gentle manners and more care of their persons. All the children seem attentive and quiet, and cases of bad behaviour are quite exceptional.

Cooking Classes in Elementary Schools in Germany.

The teaching of cooking was introduced into elementary schools in Germany by the Grand Duchess of Baden, daughter of Kaiser Wilhelm I. The first school was founded by her in Carlsruhe some four or five years ago. Here practical teaching is given, not only in cooking, but also in needlework, dressmaking, gardening, gymnastics, drawing and designing—in short, in most branches of work useful to women. Other schools of the same stamp were quickly established in many large towns of Germany, the most important being the Lette Verein School in Berlin. Teachers trained in these schools give instruction at the municipal and high schools in different towns, even in the smallest the children being compelled to learn cookery.

The system being the same in all schools the following account of the classes at Kreuznach will apply equally to the larger centres. Each class consists of twenty-four pupils, these being divided up in groups of four. Two hours once a week are devoted to each class, and every day two dishes are taught; as each day a fresh set of pupils attend, the same two dishes are taught throughout the week. Thus each child can master some eighty or a hundred recipes in the year, the German holidays being much shorter than those in our schools.

The room in which the lessons are given is very simply but comfortably fitted up. At one end of it are three stoves, which are used in winter. In summer, gas rings, being cooler, are employed, and the fumes are conducted out of the room by tubes overhead. At the opposite end are three deal tables with drawers, in which are kept short knives, forks, and spoons, while on a rail at either end hang kitchen cloths. Down one side of the room are sinks with water-taps and utensils, such as tubs, brushes, cloths, etc., for washing up. On the other are cupboards, in which are kept pots, pans, saucepans, basins, and the innumerable articles used in the cooking operations, while on a shelf are neatly arranged the children's exercise books and pens and ink.

The teacher's desk, and a table, laid out with materials to be used at each lesson, occupy the fourth side. Before the lesson begins, a number of pots are filled with water and placed on the gas fires to heat. As there are three tables and twenty-four girls, three squads of eight are formed, and each child takes possession of a three-legged stool kept under the table. The first part of the lesson being an oral explanation of the dish about to be cooked, the children sit down round the tables and listen attentively, for when she has finished explaining, the teacher asks them questions to see what they have understood. On a blackboard is written the lesson of the day and the price of the materials. During the oral explanations, the teacher shows them with real materials how to prepare the ingredients for each dish, such as slicing beans, stoning fruit, etc.

Now the stools are put away, and one out of each group of four fetches the materials and bowls of water in which to wash the ingredients. They take their knives, and, having placed a plate on a square of oilskin between each two workers so as to keep the tables as spotless as possible, the real work begins, and all hands are busy peeling, slicing, or chopping. As each thing is finished it is carried to the saucepans on the fire. Care is taken to sweep the tables every now and then, and when the first dish is on the fire the floors are swept. This instils into the children habits of orderliness and tidiness.

Then comes the next dish. The same thing happens, and when that is put on the stove the children get out their note-books and pens and ink, and again seat themselves round the tables, this time to write down to the dictation of the teacher the recipes of the dishes they have just prepared. At the end of each recipe a list of the materials required, with quantities and prices, is entered. These books, when the children leave school, are handed over to them. All the cooking taught is simple, practical, and inexpensive, so that in after-life it may be of real use to these children, mostly poor.

When this writing is finished they lay the tables, for they are allowed to eat what they cook—except such things as jams and preserves, these being religiously kept and used by degrees. Certain things like cakes the children are allowed to take home, but the schools being supported by the municipality out of the rates, in no case are the children made to pay for the dishes they eat or take away.

The food is dished up, and each quartette feeds on what it has cooked. The teacher often lunches with them, so as to teach good behaviour at table, and as she herself selects the materials for the dishes (the money being refunded by the municipality) they are the best of their kind.

In the Lette Verein School in Berlin dinners are specially cooked by the pupils for the poor. The dinners are put into large tin vessels kept hot by steam in specially-constructed omnibuses, which are driven to particular streets in the poorest quarters. There they stand while the people bring out their vessels and carry away a capitally cooked dinner for 20 or 30 pfennigs.

Another excellent idea of the Grand Duchess of Baden's is a contrivance for keeping the people's dinner hot. They have more time in the early morning for cooking than at midday, when, perhaps, to get backwards and forwards from their work to their house, to cook and to eat their dinner, they have only an hour. So the food is cooked in the early morning before they start for their work. A deal box lined with flannel or felt, the lid overlapping and having a couple of good fastenings to keep it as air-tight as possible, is filled with hay, and into this are packed the covered dishes (tin or china) in which the dinner of perhaps meat and potatoes, or pudding, has been placed. The lid is fastened, and the food keeps really hot for hours, so that when the worker comes home he finds a good hot meal awaiting him.

The cooking classes in our Board Schools might be made self-paying by following the example of the Lette Verein School in Berlin, in supplying wholesome meals to the poor by means of the omnibus system. The physique of the nation would thereby be improved, and many a human being, not having the time or the courage to cook a meal on reaching home hurried and tired, saved from hunger or the public-house.

CHAPTER XIV

DIET OF THE URBAN LABOURING CLASSES

"The human race need never die if they took care. But they don't take care and they do die."

DICKENS, "The Uncommercial Traveller."

The Nutritive Value and Cost of Various Foods. The Expenditure of Urban Labourers' Families on Food.

Too little attention is paid to the feeding of the children as they grow older. Wheaten bread, tea, jam and tinned goods may be said to be the chief diet of the wives and children of the labouring classes. An interesting study of the diet of the labouring classes in Edinburgh, by Drs D. Noël Paton, J. Crawfurd Dunlop, and Miss E. Inglis has lately appeared. It contains some valuable hints which are of importance in this connection. "Since food is the sole source of the energy required (*a*) for building up the body, (*b*) doing work, and (*c*) maintaining the temperature, it is obvious that the working capacity and well-being of a community must be largely influenced by the food supply of the individuals." (*a*) Without an adequate supply of food, proper growth and development of the body are impossible, and not only is the working capacity of the individual diminished, but a predisposition to disease is induced. . . .

(*b*) The working capacity of a man is conditioned by the amount of food he consumes and uses. . . . Food may be consumed by a man and no proportionate amount of work be produced.

Thus an insufficient supply of food diminishes the work-doing power of the body in two ways. First, by preventing the full development of muscle, the great energy liberating tissue; and, secondly, by not affording the potential energy for the work to be done.

(*c*) Lastly, a sufficient diet is essential for the maintenance of the bodily heat.

The authors go on to point out that by a scientific study it is possible to find what may be called a standard diet, *i.e.*, a diet from which the necessary supply of energy may be obtained. By comparing the diet of a community or any part of a community with such a standard, we may ascertain if it is deficient, and in what its deficiency consists. It should be borne in mind, they say, that in solving the food problem of masses of people, with an income no more than sufficient to supply the necessaries of life, the supply of food is the first essential, expenditure on rent, clothing, taxes, heating, etc., taking a secondary place.

The energy requirements vary with the age of the person and the amount of work done. The next consideration is the supply of proteid which must be contained in every dietary for the muscular development of the individual. In childhood, where growth is going on, the supply should be plentiful.

The practical part of the problem is in imagining from what combinations of food stuffs an adequate supply of these necessary elements can be most cheaply secured. Two things must be borne in mind: The initial price of the food and the amount of waste material it contains. This waste is caused by the non-nutrient material contained, such as bone, gristle, skin, bran, etc.; and nutrient material, which, on account of being unpalatable or for any other reason, is not eaten.

A cheap food is one which contains a large amount of nutrient material at a low price, a small amount of non-nutrient waste, and is so palatable that it will not be rejected. According to Attwater, "The average person selects the different food materials offered in the market with less knowledge of their actual value (as a source of nourishment), than is found in almost any other line of purchases." The authors then proceed to analyse the ordinary everyday diet of a number of labourers. Some of the conclusions they come to with regard to the special articles of food chiefly used, may be summarised as follows:—

1. *Bread.*—Bread forms the basis of all the diets. It provides on an average nearly one-third of the total energy and fully one-third of proteid. It is a cheap food, as an energy provider, oatmeal and sugar alone being cheaper; as a proteid provider oatmeal and peas alone are cheaper.

2. *Potato* is a more expensive food than bread. As an energy provider it is twice, as a proteid provider, more than twice as expensive. In average diet it ranks second in actual quantity used, but only seventh as a provider of nutriment, both as proteid and energy. The antiscorbutic property of potato justifies its large use in diets.

3. *Milk.*—Next to bread and potato, milk is found to be the most extensively used. It is comparatively expensive; as a source of energy it is five times as expensive as bread, and as a source of proteid it is fully three times as expensive. Milk is an essential food for small children, and the comparatively large use of it in a family diet is to be expected.

4. *Vegetables.*—The average expenditure on vegetables is a very small item.

5. *Sugar.*—Sugar is one of the most important food stuffs for the poor. It is solely an energy producer, but as that it is the cheapest. In this it takes second place only to bread. This large use of a food which provides energy but not proteid, is one of the reasons why the labourers' diets are badly balanced, and contain relatively too little proteid to their energy.

6. *Beef.*—Beef is an expensive source of nourishment compared with bread, its proteid being four times as dear and its energy nine times as dear. Of all the food stuffs used the most money is spent on beef, 16 per cent. more being spent on beef than on bread.

7. *Oatmeal.*—Both as a proteid and energy provider oatmeal costs less than bread. Peas are cheaper as proteid providers, but more expensive as energy providers. Sugar is cheaper as an energy provider, but contains no proteid. As a food providing cheap energy and having a good proteid value, oatmeal is the best in the entire list.

8. *Fish.*—Dried and smoked fish is expensive both as a proteid and an energy producer. Fresh fish as a proteid provider is cheap, but as an energy provider dear.

9. *Eggs.*—These seem to be universally used, and the money spent on them is considerable. It is only exceeded by the money spent on bread, milk, and beef. Eggs are an expensive food both as energy and proteid providers. Their large use may be attributed to the small amount of trouble entailed by their cooking and service.

10. *Meats other than Beef.*—*Ham*, as an energy producing food is decidedly cheaper than beef, its proteid being also cheaper than that of beef. *Sausage* as a source of energy and proteid is a cheaper food than beef. *Mutton* also is cheaper in energy and proteid than beef. *Veal* appears to be a cheap food.

11. *Butter and Margarine* are found to be a comparatively cheap source of energy, they are more expensive than vegetable foods. As a source of energy in the average diet they rank third, bread and sugar being the only two foods used which yield more.

12. *Suet and Dripping.*—A cheap source of energy, but very little used.

13. *Cheese.*—Both as a proteid provider and a source of energy it is cheap food.

To improve the dietary of the labouring classes the following principles are suggested to be instilled into them :—

(1) That a diet of tea and bread, or of tea, bread, and butter, is faulty.

(2) That the faults of the tea and bread diet can be corrected by the free use of meat, eggs, and other animal food, but that this mode of correction is expensive.

(3) That the faults can also be corrected by the free use of oatmeal with milk, or of peas and beans, without extra cost.

(4) That to correct the faults of a tea and bread diet, either money spent on animal food or labour spent on cooking of vegetable food is necessary; if they have not the money, they must give the labour necessary to the proper cooking of more nutritive foods.

It has been shown that whereas the average sum expended on diet per man per diem is about 7d., a fairly good diet can be procured for 4d.

Simple tables may be published and distributed showing :—

1st. The amount of work-producing power which can be purchased for 1d. in the more common foods.

2nd. The amount of flesh-forming material which is also got in these foods for the same sum.

If district visitors, and other workers among the poor could receive some elementary instruction in the principles of dietetics, and could be supplied with such tables, they might assist in diffusing the knowledge of which so many stand in need. Similar investigations should be carried out in other towns and rural districts, money expended in procuring such information being soundly invested. At present no means exist of comparing, on a general scale, the diet of the urban and rural labouring classes—a most vital point if a serious attempt is made to find out the cause of physical deterioration and the best remedy for its arrest.

A Blue Book (1903) prepared by the Board of Trade relating to various matters bearing on British and foreign industrial conditions, contains some information concerning the consumption of food and cost of living in the United Kingdom. Officers of the Labour Department and other investigators obtained particulars from some 400 working-class families in Great Britain as to quantities and cost of certain principal articles of food consumed by such families, consisting of a man, his wife, and children under 14 years of age. This is the more interesting, as the only other family budgets we are in possession of, those obtained by Mr Booth and Mr Rowntree, and the Economic Club and Board of Trade, are, for the most part, based on the actual expenditure for a few weeks only, and may not therefore represent the average cost of food, winter and summer.

From the 400 returns mentioned above, it appears that in 286 cases the cost of bread, meat, eggs, and cheese can be summarised, while from 88 other returns, of which 68 refer to London, sufficient information has been given with regard to other articles, including butter, milk, potatoes, tea, and sugar, the average general income being 29s. 10d. The districts from which returns were made including Birmingham, Bristol, Bolton, Dundee, Glasgow, Huddersfield, Ipswich, Leicester, Liverpool, London, Manchester, Middlesborough, Norwich, Nottingham, Plymouth, etc.

Tables showing quantity and cost of bread and meat, respectively, consumed by urban workmen's families in 1903, and cost of certain provisions (other than bread or meat) consumed by urban workmen's families in 1903 will be found in Appendix, No. IV.

The averages for "all incomes" show that, apart from bread and flour and meat, the largest weekly expenditure is upon butter (1s. 8½d.), followed by milk (1s. 5d.), potatoes (1s. 2d.), other vegetables and fruit (1s. 0½d.), tea (11¾d.), eggs (11½d.), and sugar (10d.). Of course, as in any other partial inquiry, it is difficult to come to a just conclusion as regards the feeding of the whole of Great Britain. Still a number of towns are included in this inquiry, and it may safely be concluded that the British urban labourer and his family have, as a general rule, enough money to spend upon food. But what is certain is that the vast majority of labouring men's wives have not the remotest idea of the relative properties of certain foods as compared with those of others, nor of their relative price. In nine cases out of ten, or, more probably, in ninety-nine out of a hundred, they have not the most rudimentary knowledge of decent cooking. For a quarter the price the poorest and most uneducated French peasant or labourer's wife will turn out a savoury dinner, and she will make an excellent soup out of some water, a handful of vegetables, and a small lump of butter; whereas an Englishwoman of the same class never dreams of making soup, because she is convinced that to make it she would require a quantity of meat.

Doubtless the rising generation will be better managers, thanks to the instruction they are getting at schools in cooking and housewifery. Lectures on the relative value of different foods and their prices should be included in every school at which cooking is taught.

It may also be suggested that teachers of cookery should spend some of their holidays in France, a small grant for expenses being made them by the education authorities. There, by perhaps living in a peasant's family, they would learn the secret of economy combined with excellent results. But then the French are born cooks, while we . . . !

CHAPTER XV

RURAL CONDITIONS

> *"'Tis education forms the common mind;*
> *Just as the twig is bent, the tree's inclined."*
> POPE, "Moral Essays."

The Countryman's Cottage. His Income and Expenditure on Food. The Causes of the Migration from Country to Town. The Demand for Small Holdings. Co-operation in Agriculture. Need for Changes in the Education given in Country Schools.

SPEAKING generally, the conditions of life in rural districts, even in the poorest, contrast favourably with those of towns.

To begin with, the cottage of the agricultural labourer is a far more healthy habitation than the tenement of the town labourer, and absorbs no larger proportion of his weekly earnings. It is true that the cottage is probably not ideal, that the bedrooms are small, with sloping roofs and miniature windows, that the water is from a surface well, and that the other sanitary arrangements are of the most primitive kind. But the pure, fresh air when door or window is open, the open space at back and front even if the cottage be one of a row, and the greater freedom and simplicity of country life, are compensating advantages so important to the young, that the physical development of the average country child contrasts most favourably with that of his town cousin of the same class. It is, however, undoubtedly true that the health of children, especially the younger children, suffers during the winter owing to the unfortunate prejudice which impels the agricultural labourer to crowd his family into a single bedroom, and to keep the window shut from night to morning. On the other hand the elder children spend much of their time out of doors, and even when at home are constantly running in and out of the house. The other great essential for the growing child, food, is also of better quality and generally more ample. As a rule, even if the cottage has not a garden, the labourer can rent an allotment. In either case he grows potatoes or cabbages and other coarse vegetables which form a regular part of the diet of his family. It would appear from the following table, that the agricultural labourer's family in the northern counties spends nearly as much on bread and flour and meat as the family of a town labourer,* whose wages are under 25s. a week; while the former has the produce of his garden to add variety and many health-giving qualities to his diet.

TABLE *showing* (1) *Average expenditure on food, and average cost of* (2) *bread and flour, and* (3) *meat consumed weekly by agricultural labourers' families in* 1902.

Articles.	High-wage Counties.		Low-wage Counties.		General average for England.
	Northern Counties.	Midland Counties.	Eastern Counties.	Southern and South-Western Counties.	
	S. D.	S. D.	S. D.	S. D.	S. D.
1. Total expenditure on Food . . .	14 10½	13 5½	12 4½	13 4¾	13 6½
2. Bread and Flour .	2 10¾	3 0¾	3 10	3 10¼	3 5
3. Meat (including Beef, Mutton, Pork, and Bacon) . . .	5 2½	4 9¾	3 2	3 5½	4 2
Total . .	8 1¼	7 10½	7 0	7 3¾	7 7
Per cent. of total value of Food consumed .	54·5	58·2	56·6	54·6	56·0

The information collected by Mr Wilson Fox for the Board of Trade shows that the total earnings of all classes of agricultural labourers in England ranged, in the year 1902, from 15s. to 22s. a week, the average being probably about 18s. 6d. In explanation of the above table showing the average weekly cost of (1) bread and flour, and (2) of meat, including bacon, consumed by an agricultural labourer in several groups of counties, it should be added that the lowest earnings are in the eastern counties and the highest in the northern.

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* See Appendix, No. IV.

It will be observed that more bread and less meat is eaten in the low-wage than in the high-wage counties. Indeed, in the former, beef or mutton is frequently purchased only once a week; in the latter pork and bacon are eaten instead. In the eastern counties only 1 lb. 12 oz. of beef and mutton are consumed in a week, while pork and bacon amount altogether to 4 lbs. 1 oz.

According to these returns, the estimated value (13s. 6½d.) of the principal articles of diet come to about 73 per cent. of the average weekly earnings (18s. 6d.). But this sum does not include money which a labourer may make by his garden, by an allotment or potato ground, or the keeping of pigs and poultry; nor have the extra earnings of wife and children been taken into consideration. It is said that it is often impossible for mothers in the country to buy milk for their infants, owing to the fact that it is all sent to towns or used for making butter. From another table, given in the same Blue Book, it appears that the average amount of milk consumed weekly by an agricultural labourer's family is 4½ pints of new milk, or 8¾ of skimmed. Even supposing the milk to be whole, a quantity equal to less than three-quarters of a pint a day would not go very far in a family that includes a baby requiring artificial feeding.

It is a well-known fact that although it may be inadvisable for town workers to become vegetarians, it would not be hurtful to those living an active out-of-door life. From the economic point of view vegetable foods are best. For a given sum more building-up and energy producing qualities can be obtained from vegetable than from animal food. The value of fruit as an article of diet is not sufficiently appreciated in this country. Fruits contain a large percentage of sugars and other carbohydrates; nuts are rich in proteids and fats. A complete diet could if necessary be obtained from fruits and nuts alone, and it is a mistake to treat them as luxuries, or as mere accessories to a heavy meal.

It is sometimes said that country children, owing to the long distances they have to walk to school, arrive fatigued and unfit to benefit by the teaching. This may be true of very young children, but to judge by one of the young London essayists, whose views of country life were published in the *Spectator* last July, this does not seem to apply to older children. This is what he writes: "I should like to live in the country; I like the long country walks to school and work."

In many other respects the life of children in the country is healthier than in towns. For example, they escape late hours and get more sleep; as a rule the whole household goes to bed early, and though the father may get up early too, the children generally have a good night's sleep. This is not a trivial matter, for not only does it favour healthy growth of body, but is good for the mind in order that the child may come to its school tasks fresh and alert. For the young child, sufficient sleep is only second in importance to good food. The more regular hours also give a sense of order which remains through life, and the moral contamination of the streets is avoided in the country. There is much less drinking among women, and most cottagers' wives take a pride in keeping their rooms clean and even pretty, and in sending their children tidily dressed to school. In summer the front garden filled with beautiful old-fashioned flowers is a blaze of colour; the cultivation of the garden and the tending of the flowers has a refining influence, and brings the child early into contract with nature. A little later the boy learns to know something of the habits of domestic animals, and to take an interest in the farm work proper to each season of the year; while the girl, perhaps, learns from her mother to manage poultry and bees. All this should tend insensibly to educate country children for the calling to which they appear to be destined. Why then do so many of the most intelligent and of the strongest when they grow up seek an uncertain fortune in towns?

One reason may be found in the absence of any prospect of advancement. Take the small farmer: his sons work, as a matter of course, on their father's farm, ploughing fields, tending cattle, and so on, and in nine cases out of ten they receive no wages: they are just boarded and lodged. But a time comes when they realise the hardships of having to work for nothing when, were they ordinary labourers, they would be earning wages.

In the case of the agricultural labourer the expectation of higher wages is probably the chief inducement for migrating to towns. To the young farm labourer who is earning, perhaps, 15s. a week, who has no prospect of ever getting much more, however hard he may work, and sees about him old men past their prime earning less, 25s. a week seems riches. He forgets that he must pay more for a tenement in a crowded slum than for a country cottage,* and that the vegetables and the small perquisites from the farm must be purchased in the market. He does not realise how depression of trade may throw him out of work for weeks or months, and the difficulty there is for the workman who grows old to find regular employment in towns, where he is constantly being elbowed out by new comers.

Many young men and women are attracted to town by the desire to see life, as they call it. They think the town will be livelier and more amusing, and they contrast the music halls and even the brightly lighted streets with the quiet homes and muddy roads of the country. It is, however, probably easy to attach too much importance to particular inducements. The two main causes of the desire for change are, firstly, that the agricultural labourer has little or no prospect of improving his position and making some provision for old age; and, secondly, the failure of the elementary schools to give the kind of education which should reconcile him to remain in the country.

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* In London the average rent paid by a working-class family is estimated to be about 5s. a week; in provincial manufacturing towns it is about the same; in Manchester and Liverpool it appears to be lower, about 4s.

The want of any reasonable prospect of bettering himself, undoubtedly induces many a young man to leave the country. He feels that work as he may he can, as a rule, never hope to be anything more than a labourer earning a weekly wage. This feeling is strongest with the most intelligent and robust, and if, as is probably the case, it is they who migrate in greatest number to towns, it follows that the intelligence and physique of those who remain must be inferior to the average. It would seem, therefore, that it is the best of the rural population, those themselves the most vigorous, and most likely to be the parents of vigorous children, who suffer in greatest number the individual deterioration produced by towns. No nation can go on indefinitely withstanding this drain upon its fountains of vitality. The process is one, not of survival of the fittest, but of the least fit. The point is therefore of the first importance, and if landlords who lament the depopulation of their villages would seriously consider first, whether there is adequate cottage accommodation; and, secondly, whether they could not hold out to the more ambitious, industrious, and intelligent of the young villagers, some hope that they might eventually become proprietors of small holdings, a great step would be taken towards checking the flow of population from the country, and of even reversing its direction. Experience proves that where small holdings exist the exodus is comparatively small; labour, that bugbear of the large farmer, is more plentiful since the small holders are generally ready to work for others in their spare time, and the produce from the land is larger. Moreover the families are bigger; children are an advantage to the small farmer, and it may be said of him, as of the patriarchs, "blessed is the man who hath his quiver full." The experiments of Sir Richard Edgcumbe in Dorsetshire and of Major Poore in Wiltshire, prove conclusively, that when reasonable opportunities are afforded, farm labourers will come forward in sufficient numbers and eventually become the owners of as many small holdings as are available.

Mr Tomlinson, M.P., Professor Long, and Mr Spear, M.P., and others, are working out a similar scheme for bringing back labourers to the land. They have purchased 365 acres of fine old pasture land at Newdigate at £15 an acre with tithes. They advertised that they were prepared to sell lots from the historical 3 acres of Mr Jesse Collings to 20 acres, and, to meet individual requirements, would advance part of the purchase money. There were some 1200 applicants from which the 25 who seemed most desirable were selected. These are to pay the purchase money in ten years, 10 per cent. being paid on entering and 5 per cent. on the outstanding balance. The promoters of the scheme are erecting cottages for certain of the tenants, who are mostly people having made a little money in other callings. Considering the fertility of the land they should make their venture pay.

Mr Rider Haggard gives a most interesting account of Major Poore's experiment which has resulted in the establishment, on somewhat unpromising land, of a thriving settlement of little freeholders, and this without loss to the landlord.* The experiment began in 1892, when Major Poore purchased a holding, the greater part of which he mapped out into lots varying in size from a ¼ of an acre to 16 acres, to suit the pockets and prospects of intending purchasers. All the plots were taken up, and a small proportion were paid for in full at the rate of £15 an acre. The results, down to 1901, are thus stated by Mr Rider Haggard: "Of the freeholders who elected to pay by instalments—to be more correct they are leaseholders for two thousand years—or their representatives, none had defaulted or fallen into arrear, although one, I think, had sold his plot for cash at an advance of 50 per cent. over cost price."

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* *Rural England*, vol. i., p. 10. London, 1902.

Sir Richard Edgcumbe's* experiment has been equally successful. A farm was purchased and divided into 27 holdings averaging about 11 acres each. They were sold on the instalment principle and found ready purchasers; 8 of the purchasers were agricultural labourers, 3 were gardeners—one of the gardeners has erected a large amount of glass-houses; 24 of the purchasers have made a thorough success of their holdings, 2 attained only a qualified success, 1 man failed and had to sell his holding. The effect of such a scheme upon the population is well shown by the fact that, whereas when the farm was managed by a single farmer 21 persons dwelt upon it, the population is now close upon 100. There were 4 cottages upon the farm originally; 14 of the purchasers have erected buildings, and more houses are to be built.

Mr Rider Haggard quotes also the conditions existing at Epworth in the Isle of Axholme,† and at Downham in Cambridgeshire.‡ At Epworth 5741 acres are held by 294 occupiers, of whom 235 hold under 20 acres apiece, 115 of these hold under 10, and 80 under 2 acres. Most of the men do not confine themselves to growing potatoes, for which the Isle is famous, but follow a course of general farming, and raise more grain per acre than large farmers, an equal weight of beef, more pork and vegetables, but less mutton—small holdings, as might be expected, being unadapted to sheep. At Downham the land is held for the most part under a copyhold tenure; the fines payable on death or sale press heavily on the small holders, and have generally to be met by raising money on mortgage. Consequently they have to work harder than the ordinary farm servant to earn a living; but they would not change their lot for that of a labourer. They bring up large families, and few of the sons care to migrate to the towns, as most of them hope eventually to hold land of their own.

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* *Rural England*, vol. ii., p. 274.

† *Ibid.*, vol. ii., p. 40.

‡ *Ibid.*, vol. ii., p. 186.

In Denmark, Luxembourg, and elsewhere, State aid has been wisely distributed, and agricultural societies have given supervision and help to individual small farmers as regards quality and uniformity of production. The result has been that exports have largely increased, and the rural population in these countries has secured a large share in the markets of Great Britain. A similar policy might be expected to yield similar results in this country. The pressure on the rates and the present condition of the rural population makes it impracticable to expect that these improvements will be provided by the action of local authorities. The Committee of the British Association has reported that it would be an advantage to the whole country, as well as to the districts directly concerned, if loans from Imperial sources were obtainable by landowners and others, on favourable terms, for the equipment of small holdings and the provision of cottages; and further, if the Board of Agriculture, both directly and through agricultural societies, would carry out a policy of encouraging and organising special branches. Among these, dairy and poultry farming, market gardening, agriculture, and fruit growing should be included.

It is satisfactory to find that the cultivation of fruit is increasing in Great Britain. In 1888 the area of orchards and small fruit gardens was returned at 235,902 acres, in 1902 as 312,234 acres—an increase of 76,332 acres. The increase in small fruit gardening was especially remarkable, the area so cultivated having more than doubled in the interval (36,724 acres to 75,378 acres). There is no doubt that, as has been pointed out by a writer in the *Quarterly Review*,* the chief obstacle to fruit farming has been the lack of security of tenure to tenants who were disposed to plant. It is, as he observes, best to purchase the land upon which the enterprise is to be carried out. In the Channel Islands, where fruit growing has made extraordinary progress, most of the cultivators are proprietors, and it is probable that the industry would increase still more rapidly in such districts as Kent, Hereford, Somerset, Devon, and parts of Gloucestershire, Worcestershire, Cambridge, and Sussex, if a system of selling land freehold could be introduced. As it is, most of the cultivators hold on lease, or even on yearly agreement, and there is too much uncertainty with regard to obtaining value for unexhausted improvements at the termination of the lease or tenancy. Remembering the period which must elapse, even in the case of small fruits, before a profit can be expected, and the considerable outlay in planting, it is obvious that persons desiring to engage in the industry would prefer to become the proprietors of the holdings. Mr Jesse Collings' Bill, although a move in the right direction, does not quite meet the case. This Bill, Purchase of Land (England and Wales) Bill, 1903, would authorise the Board of Agriculture to purchase land "for the purpose of providing holdings for persons who desire to buy and who will themselves cultivate the holdings." The Board would have power to expend money in reclaiming the land and making roads and fences, and also in building or adapting a dwelling-house and outbuildings. Further, the Board would be authorised to advance four-fifths of the purchase money. The Bill, however, provides that no holding must be less than 50 acres, and this would seriously diminish its usefulness, more especially in connection with fruit growing.

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* October 1903.

The Board of Agriculture has recently appointed a Departmental Committee to report upon the present condition of fruit culture in Great Britain, and to take measures to advance and encourage this industry. It is to be hoped that the labours of this Committee will have important practical results. In most parts of England suitable for fruit growing markets are close at hand, and it is interesting to note that the exodus from the country has been most severe from those districts where there are fewest industrial towns and villages, increasing in most districts in proportion to the distance from railways and manufacturing centres, and has seriously affected many formerly prosperous market towns in the agricultural districts.

When it is realised that in 1901 the sum expended upon raw fruit imported into the United Kingdom was £7,623,500, it will be seen that there is a large trade to be secured by Englishmen. At present that branch of horticulture is practically confined to a few counties, nearly one-third of the area under small fruit in England being in Kent alone. In the Channel Islands a great deal of fruit is cultivated, much of it under glass, on very small holdings. The cultivators are generally freeholders, and the trade is very profitable, the islands being as a whole extraordinarily prosperous. In England also growers of fruit under glass are more successful than those who cultivate it in the open. The writer in the *Quarterly Review* states, that an inquiry made in 1899 led to the conclusion that in the thirty years before that date the area of commercial houses in England and Wales had risen from less than 100 acres to fully 1100 acres, and that in 1903 there were probably 1300 acres under "commercial glass-houses." It is estimated that three-fourths of the glass-houses are devoted to fruit, including tomatoes and cucumbers.

In France fruit grown in orchards by the road-side is often as good as our most carefully selected specimens, while the garden fruit grown either on standard trees or walls equals our hot-house fruit. But in that country fruit growing is a science, and gardeners spend half their lives studying and experimenting, with the result that they can command the high prices which we have to pay when we get our best fruit from France. There can be no doubt that there is a great future for open-air fruit culture in suitable districts in England, Wales, and Ireland, if carried out on scientific principles. Training colleges should be established in all the most promising districts, so as to bring theoretical and practical training within the reach of students, male and female. Orchards and walled-in gardens would be required for experimental purposes, and the profit on the sale of the fruit used to help to maintain the colleges. Valuable practical experience has been gained on the Woburn experimental fruit farm established in 1894 by the Duke of Bedford, the object of which is "to ascertain facts relative to the culture of fruit, and to increase our knowledge of, and to improve our practice in, this industry;" the experiments prove many errors into which the ordinary fruit grower falls. As in every other trade, the best article commands the best price, and repays extra initial cost and trouble.

But in order to obtain the best results cooperation is essential, in the provision of capital and especially for marketing and selling the produce. Take dairy farming, poultry farming, or fruit growing. Very little can be accomplished by isolated individuals with small capital in the teeth of organised foreign competition. But when farmers combine, co-operative farming becomes possible. This is proved by the experience of the Irish Agricultural Organisation Society as well as by the German land banks. German farmers can obtain from 3½ to 3¾ per cent. even for the shortest period on any money they do not want to use, and they can borrow at from 4 to 4½ per cent. for short periods up to two or three years.

In the matter of co-operative production Ireland affords an example which England would do well to imitate. Although the movement is still young, there is hardly a county in Ireland which does not contain several co-operative creameries. Small farmers keeping perhaps one or two cows, are enabled by this system to find a regular market for their milk all the year round. At the creamery, the butter is made by skilled dairymaids, and shipped in bulk to large towns chiefly in the North of England, while the separated milk is returned to the farmer for his pigs. A similar principle is applied with equal success to the collection and sale of eggs, and it is obvious that it could also be applied to fruit farming.

The smaller branches of rural industry which could be followed by women include poultry farming on a small scale, apiculture, and flower culture, lace making and other cottage industries. County councils are now authorised to include the teaching of the principles and practice of agricultural co-operation among the subjects for which grants may be made. It does not appear, however, that so far advantage has generally been taken of this permission; yet it is most important that the system should be explained to the small farmer and agricultural labourer, and it would be well if all county councils would follow the example of the Buckingham Council and appoint a county organiser at an adequate salary.

The belief that the kind of education given in the elementary schools is one reason why young people will not settle down in the country like their forefathers, is very widespread. It may be in part due to the prejudice against education which still survives in the breast of many a squire and farmer, though it finds less emphatic expression than a generation ago. But it is not entirely prejudice, and in considering this subject the inquirer is irresistibly compelled to ask whether some part of the impetus, causing the flow from country to town, may not be due to wrong educational ideals. It may, perhaps, seem to some going too far back to suggest that the classical and literary traditions of our public schools and universities have been responsible for imposing on the children of rural districts a system too essentially literary in its conception. But a moment's reflection will show that this result was almost inevitable. The clergy, who were the moving spirits in the establishment and conduct of rural schools, were for the most part trained in the traditions of Oxford or Cambridge; so too were the officers of the central authority who have framed succeeding Codes: for them, education meant books. Very slowly is the modern scientific idea of education spreading—that it should be such a training as will best develop the intelligence of the boy or the girl to do well that work which the man or the woman has to do. People lament that young lads and girls waste their time on unwholesome literature. But what would you? Though the notion will be repudiated by the men responsible for its dissemination, these young people have been taught that any reading is in itself an accomplishment. The boy who is to be a farmer or a farm hand, the girl who is to be the mistress of a farmstead or a cottage, should be taught to recognise the dignity of labour, and to regard books as a means of education. They should be trained up to observe the processes of nature, and should be given a good grounding in the principles of the sciences on which agriculture and horticulture rest. A smattering of chemistry or of biology ("with diagrams") would be no more valuable as a mental training than a smattering of literature or history, or mathematics. It is not necessary before comprehending the principle upon which the common pump works to understand the binomial theorem, but it would be very good for the young rustic to know something about the pressure of the atmosphere; the process of the germination of seeds would certainly arouse his interest, and the simple elements of the chemistry of artificial manures would explain to him facts within his observation.

Country life, we are told, is found dull and uninteresting by the lads taught according to the Codes. If the assertion be true, does not the conclusion follow that the Codes must be badly drawn? The aim of compulsory education is to fit the boy for the calling he is to follow as a man. If the system ends in unfitting the country boy to be a country worker and, as has been asserted, to make him despise his parents, obviously the system must be at fault. The remedy for rural depopulation, some would tell us, is *panem et circenses.* But man does not live by bread alone, and the circus can be enjoyed in due season in the market town.

It is the custom of the town worker to despise the country man. But this contempt is bred of ignorance. The knowledge, intelligence, and judgment required to be a good shepherd is at least equal to that needed to be a good watchmaker, and to drive a straight furrow requires more dexterity and tact than to stand by while a machine chops pins or punches pens by the million; or winds steel tape on a screw gun.

Similar causes are producing similar results in other countries. In France the exodus from the villages causes much anxiety, and educational authorities appear to admit that the character of the teaching in the primary school may be in part responsible. The late M. Félix Pécaut in his *Quinze Ans d'Education*, published in 1902, after his death, suggested that a change in the subjects taught has been proved to be necessary.

"First of all," he writes, "teach the children to take an interest, not only in books, but in the life of the fields. Teach them gardening, and how to keep bees, the making of cheese, and the management of a dairy. Show them the reason of these things, their cause, and the possible improvements. Above all, in educating your little rustics, do not impose an ideal from without; work your reform from within. Make your scheme of education deliberately rural; be sober, just; teach them courage, and the contempt of mere ease and well-being; give them a wholesome ample way of looking at things; instil the taste for an active life, the delight in physical energy. Try and turn out, not a mandarin, but a man of the fields."

CHAPTER XVI

THE EVIL EFFECTS OF DRINK

> *"The vine bears three clusters—the first of pleasure, the second of intoxication, the third of outrage."*
>
> EPICTETUS.

Drink and Poverty. Drunkenness among Women. Drink and Crime. The Children of Drunken Mothers. Drunkenness and the Overlaying of Infants. Drunkenness and the Law. The Public-House Trust Association. The Diminution of the Number of Public-Houses.

THE appalling amount spent on drink, out of all proportion with the wages of the labouring classes, is a far more serious question, when studying the evils of drink from the point of view of the national physique, than the actual cases of drunkenness which occur. A labourer and his wife, earning say 20s. a week, spend a quarter of it on drink (and this is, more often than not, the case), this family is crippled, and has to deny itself food so as to make up for the expenditure on liquor. That is why poverty and drink are so closely allied. We move in a vicious circle and do not, as a doctor would in the case of a sick man, go to the very root of our social evils. If carefully reasoned the social problems affecting the physique of the nation are so closely interwoven as to be inseparable. We have said elsewhere, that girls (and for that matter boys also) at school should be taught cooking, and the properties of foods. Ignorance in cooking is responsible in nine cases out of ten for the craving for alcohol; the money wasted as effectually on alcohol as though it were flung into the ocean might be spent on food, which, if chosen with judgment and nicely cooked, would not only build up the body but would soon kill all unwholesome craving for drink.

We have seen that drink causes poverty: to it may also be ascribed deterioration of body and mind. One person in every 293 of the population was insane in January 1903, states the report of the Commissioners in Lunacy issued in July.

Alcoholic excess was assigned as the cause of 23·1 per cent. of the male, and 9·6 per cent. of the female cases. Inebriety in men and women, but particularly in the latter, is one of the chief causes which tends to the degeneration of the British race. Alcoholism has its share in the decreasing birth-rate and in the abnormally high infantile death-rate : for the dearth of young men of strong enough physique for the requirements of the army, the navy, the police, and other public services.

The increase of drinkers may be ascribed to town life with its overcrowding, machine-done work tending to rush, and its accompanying strain on the nervous system ; while the increased employment of women at daily work is a factor tending to make them disinclined to cook meals, and also to feel entitled to drink. In the window of a public-house in Whitechapel has been seen a card, on which was written the following notice :—

" A friendly lead will be given on Wednesday night in aid of Bill Sykes, whose wife has just died and left him totally unprovided for."

It is a fact that there are many women who support their husbands. As bread-winners, doubtless, many women feel entitled to spend part of their earnings as their husbands would under the same circumstances.

Convictions of women are on the increase in large cities, and cases are reported at Liverpool where one woman was found lying in the open street intoxicated, with her 14-day old baby by her side, another also drunk was carrying her child by one leg head downwards, while a third had flung hers at a policeman several yards away!

In the metropolitan police districts the apprehensions for drunkenness and drunken and disorderly conduct have gone up in fifteen years from a little over 3 per 1000 of the inhabitants to 9 per 1000. Although the population has increased by 300,000 during that period, the number of public-houses remains about the same—10,400.

In provincial towns the state of affairs is not much better, and unfortunately excessive drinking and crime are closely allied. At the assizes recently held at Durham forty-seven cases came before the court, thirty-nine of which were attributable directly or indirectly to drink; four of these forty-seven cases were charges of murder. Mr Justice Grantham recently made some remarks from the bench, which were resented by the Croydon Licensed Victuallers' and Beersellers' Protection Society. That body adopted a resolution of a somewhat personal character, which drew from Mr Justice Grantham a retort, in the course of which he said: "I have lately been brought face to face for weeks with the conduct of publicans in the carrying on of their business, which has resulted in the most heartbreaking crimes that it is possible to imagine. Husbands murdering their wives,

wives their husbands, fathers their sons, friends their own best friends—all through the maddening influence of excessive drinking. Twelve murders, eighteen attempts at murder, and woundings without number that were just as likely to have ended in murder as far as the conduct of the criminal was concerned, have been mine and my brother Judges' daily fare for the last four weeks on one circuit, and in almost every case, as appeared in evidence, drink was the cause—drink served by publicans and not at clubs, and drink proved to have been served in the public-house where the man was openly drunk. These are the men whose conduct I complained of, and these are the men who the Croydon publicans consider are carrying on a lawful and respectable trade, and on whose behalf they speak of my strictures as being 'vile aspersions.'"

The fact that intoxication affords no excuse for crime has been emphasised from the bench from time immemorial. The only exception to the rule is in the case of murder, where it is possible to prove absence of "malice aforethought" by showing that the prisoner is intoxicated. Delirium tremens, however, is an excuse, and attempts have been made from time to time (but without avail) to argue that the existence of a form of insanity, termed *mania e potu*, should be sufficient to excuse the prisoner. It is obvious that if drink were an excuse for crime the safety of the public could never be guaranteed, inasmuch as an intending malefactor might always shelter himself behind the plea of intoxication.

It is a common practice for expectant mothers and nursing mothers to take stimulants, and in both cases the children suffer. It has been stated that alcohol consumed by the mother passes, as alcohol, into the circulation of the unborn child and causes all sorts of moral and physical malformations. A child born in jail, where it is impossible for the mother to obtain drink, often turns out better than its brothers and sisters. In some cases hereditary drunkenness causes epilepsy, imbecility, and finally extinction; but it is said that a drunken father has not nearly such an injurious effect upon the physique of his offspring as a drunken mother.

The death-rate among the infants of Jews is lower than that of Christians, for the reason that Jewish women do not drink.

According to Dr Claye Shaw the children of drunken women are born with all sorts of deformities, mental and physical—they fill Broadmoor; 56 per cent. of the offspring of inebriate women die at birth or before the age of 2 years, while in the case of sober women the percentage is only 26. The survivors lack self-control and are neurotic, impulsive, and hasty.

Statistics of drunkenness among women in London appear to prove that it is increasing rapidly. The number of drunken women apprehended in 1901 was nearly double the number for 1892. The recent report of the Inebriates Acts Committee of the London County Council calls inebriety a form of insanity. That it chiefly attacks women is proved by the action of the Council in providing a reformatory only for women, and it is a fact that inebriate women have already cost ratepayers £39,000.

Dr Wynn Westcott, Coroner for North-East London, has stated recently that England excels all other countries in Europe in the proportion of deaths of infants under 1 year of age, from suffocation in bed with their parents or nurses. "During the recent ten years there were 15,009 overlain infants in England and Wales, and in the year 1900 there were 1774. In Liverpool, during one year, there were 143 cases out of 960 inquests, more than 1 in 7 cases. The death-rate from this cause in London is shamefully high. In the year 1900 there were 615 such cases, in 1901 there were 511, and last year (1902) there were 588 overlain infants in London alone. The inquests for London were about 8000 in number, during each of these three years, so that 1 inquest out of every 14 was upon a case of overlaying. The proportion in the districts of the nine London coroners varies considerably, being high in proportion to the poverty of the inhabitants of the districts." He goes on to state that "it cannot be doubted that a considerable number of infants are overlain by parents who, habitually sleeping with a baby in bed with them, yet follow the same practice when they go to bed, well knowing that they are intoxicated with alcoholic drink and reckless of the consequences. It is likely also that if a drunken mother gives her infant the breast milk before going to sleep the baby may become more or less stupefied by the alcohol in the milk, and so fall as easy prey to gradual suffocation." In Germany such deaths are almost unknown, but then German mothers do not get drunk.

Among the reasons likely to have caused increase of drink among women are—the example she has had since she first saw out of her eyes with understanding, for if her parents are steady there are the neighbours; the running backwards and forwards to the public-house for jugs of beer, and the recollection of what she has seen going on there. The following story is an example of what is stamped on the slum child's mind :—

"Autobiography of a Penny." A little Bethnal Green girl, aged 9 years, was recently set to write an essay under the above title. Here it is, word for word, as she wrote it: "I am a Penny with the King's head on one and Britannia on the other side, and I lost myself, and a boy picked me up, he took me to his mother to buy half-a-pint of beer, and a lady came in to get a pint and the man gave her the change with me in it." That the passing of money in and out of a public-house should be an east-end child's chief idea of its value is significant. There is more pathos in the story than the little essayist consciously put there.

The change in woman's position has much to say to increase of drink among women also. Whereas, in the olden days, she was a domestic drudge, now she is often a worker and breadwinner, a comrade to the man she has married, and a person of independent means. Further, whereas it used to be considered a slur for a woman to be seen in a public-house, now it is the fashionable thing for a young man to take his girl there openly and treat her to drinks. Few young women drink to any extent before they are married, but after this what they call their "worries" begin. Their homes are often comfortless, and supposing they go out to work they come home too tired to relish cooking or eating much food. They feel the pangs of hunger, and to satisfy them drink instead of eating. Others suffer from being left alone day after day while their husbands are out at work, and these drown poverty and *ennui* in drink. Supposing them to be able to sew, how can they afford to buy materials to keep themselves employed? The literature of the better-off ones consists probably of a paper once a week, filled with police news and crimes, sensational and unwholesome from the first to the last line. They have no ideals, no imagination; they just have to grope through a dull routine life in cheerless homes. Outside they meet friends with whom they can gossip, and who teach them that drink dulls their real and imaginary worries, and beginning with small quantities, they gradually go on and on until they lose all self-respect.

The men usually drink beer, and it takes a lot to make a man drunk; the women drink gin if they have plenty of money, and can afford the luxury of gradual stupefaction. But if they have only a penny to spend they invariably take beer and gin mixed, this being considered an ideal mixture with which to become "fuddled."

Then it is that they see everything in a rosy light and forget hunger, cold, and alas! even their own children. When one penny can produce such results, it will be seen how difficult the problem is to grapple with. The children are the real sufferers, for a woman who yields to drink generally neglects her home and her children. They have bad food at uncertain hours, and are often left locked into or locked out of the house until their mother chooses to come home to bed. An unsteady woman is often the cause of a drinking husband. It may be taken for granted that where a man has a steady wife and a comfortable home to come to, he will not be tempted to go out again after his hard day's work. But when he has not, who can blame him for going to the public-house instead?

It has been urged that to the enormous numbers of public-houses is due much of the drinking that goes on. It may be assumed that the larger public-houses are the most respectably conducted, and as they go down in size and smartness they are less well managed and less respectable, until lowest in scale come beer-houses. It has been suggested that the bad public-houses should be weeded out, while the most respectable ones should be enlarged and licenses only granted to better-class managers, required to put their foot down and refuse to allow excessive drinking and rowdy conduct. As the accommodation in these houses would be larger, the actual numbers able to get drink might possibly not be much diminished, but they would have to drink in moderation and behave respectably, so that by degrees drinking excesses would be put down, and a higher standard of morals attained. It is a hard nut to crack from every point of view.

Coming to actual drunkenness the law says that the publican shall refuse to serve a drunken man. Admit for sake of argument that a publican is really anxious to carry out the law. He has so many conditions of drunkenness to contend with that he may often break the law without meaning to. Different men have different symptoms, which make it difficult to diagnose the psychological moment when the fatal stage is reached. There are the maudlin, the unsteady, the talkative, the quarrelsome stages; there is the man who seems all right until he gets out into the open air and then becomes hopelessly unsteady. In an ever-changing crowded assembly it is hard for a conscientious manager to be quite certain, and easy for an unscrupulous one to keep his eyes shut. It is said, too, that the police wink at it as much as possible. The confirmed drunkard will always manage to get drink; drunkards are unfortunately cute, but certainly were the numbers of public-houses reduced, the temptation to drink by the ordinary man or woman, who does not necessarily drink hard, would be removed with them.

It is quite certain that the teetotal movement is an absolute mistake, and has done much to disgust reasonable people who might have been disposed to accept more moderate measures. It is like doubting their powers of behaving like human beings. There may be irreclaimables, but there are also those who under the force of wise guidance might gradually reach a higher level.

Earl Grey is president of an association called the Central Public-House Trust Association, the object of which is to promote temperance, to secure that all new licences, with their enormous monopoly values, shall be held as trusts for the community, and not be given to private individuals for private gain. There is in most counties and many towns a local trust company, whose aim is to acquire existing licensed houses or to offer to manage them for their owners, and also whenever the magistrates think it desirable to create a new licence, to ask on public grounds that it shall be granted to the trust company. The dividend is limited to 5 per cent., so that the shareholders may have only a nominal monetary interest in the trade. The council are empowered to apply all surplus profits to objects of public benefit other than those properly chargeable to the rates, the chief consideration being the provision of counter-attractions to public-houses. In case of the wind-up of the trust company, the assets, after repayment of the shareholders' capital at par, to be handed over to the council for public objects.

The main idea of the scheme is to conduct public-houses rather as refreshment houses than as mere drinking bars. Such things as non-intoxicating drinks—tea, coffee, and cocoa—and also food are there, if customers care to ask for them instead of liquor, and the food and drink supplied are of the best quality. The managers are paid a fixed salary and have no interest in profits from the sale of intoxicants, so are not tempted to push their sale, while they are encouraged to promote the sale of food and non-intoxicants. Earl Grey accounts for the widespread acceptance of the trust principle, as due to the fact that the public-house is recognised as a public necessity, and that therefore it is desirable to convert it from a mere drinking bar into something resembling, as much as possible, a well-conducted club, At present it is to the publican's interest to force his drink on the public; the customer has to drink liquors good or bad, manufactured by the brewery or distillery company to whom the house belongs, and thus privileged individuals get the high profits resulting from monopoly rights which should rightfully belong to the community.

It has been urged by some that the Public-House Trust, although calculated to diminish excessive individual drinking, may, on the other hand, tend to increase the national consumption of drink. The many instances quoted by Earl Grey of the sound principles upon which the Trust Public-Houses are managed, must serve to allay apprehension on that score.

Sir Edward Clarke, in his address before the Constitutional Club, proposed that after the passing of the Act no new on-licence shall be granted for either a public-house or a beer-house. The increase in the number of licences would be checked, whereas the population would go on growing. On the other hand, he argues that no renewal or transfer of an existing licence shall be refused on the ground that the house is not required for the convenience of the neighbourhood. The misconduct of the holder would be the only thing that would make it possible to cancel a licence. Justices, in view of licences not being evenly distributed over a given area in proportion to the population, should be given the power to transfer any existing licence from one spot to another within their jurisdiction, subject to the law respecting notice, opposition, and confirmation, now in force with regard to applications for new licences. These transfers to be subject to the approval of the justices for the division as causing no inconvenience to the locality.

The drawbacks to this scheme are the uneven distribution of the population and the constant changing about of it, and the varying proportion to the population of public-houses in various districts. There would have to be a periodical rearrangement of licences on the lines of a census. Failing this, some districts would possess a plethora of licences, while a new population would be unable to obtain any beyond those already existing in that particular district.

Sir Edward Clarke mentioned that in 1872 there were 70,000 public-houses and 53,000 beer-shops; in 1896 there were less than 67,000 public-houses, and only 35,000 beer-shops—thus taking both classes of licences together, there had been a reduction of 21,000 in twenty-four years.

Assuming the same process continued until thirty years had passed from the time at which he was now speaking, our population would then be

45,500,000, the number of licences 85,000, and this would give a proportion of licences to population very little differing from that indicated in the minority report of Lord Peel's Commission, and now accepted by temperance reformers as the proportion which they are content to accept. To these reformers thirty years might seem a long period of delay. But the last thirty years had been spent in agitation and political strife. Would it not be better now to let the conflict cease and secure a gradual but a certain improvement? Sir Edward Clarke did not like the plan of the surrender of one licence for the purchase of another, and he considered it was not legal for a magistrate to make it a condition of granting a new licence that two other licences should be surrendered.

There is nothing which clashes in Lord Grey's and Sir Edward Clarke's schemes, and if the reduction in numbers which the latter works out takes place, and the civilising influence of Lord Grey's Public-House Trust movement goes on, these two reforms worked simultaneously might be the nearest approach to the satisfactory solving of this vexing problem.

To these should be added the conscientious teaching in schools to all children the evils of drink, and if necessary the removal by degrees of all schools to the country, where the children would remain as boarders the whole of their school life, away from the evil influences of the slums. These are drastic measures, but if a human being is suffering from a disease, does the surgeon try to delay a necessary operation by opiates? Nothing short of the most drastic measures will cure the evil, and the sooner this is realised the better.

CHAPTER XVII

SCHOOL CHILDREN OUT OF SCHOOL

> *"ridentem dicere verum*
> *Quid vetat?"*
>
> HORACE, "Sat. 1."

The Life of the Street. Mrs Humphry Ward's Recreation Classes. The Use of School Buildings for Recreation Classes. Boys' Clubs.

WHAT becomes of school children between the hour they leave school and bedtime, is a question most vitally important to this inquiry; they are turned loose upon the streets when the school closes at 5, and not all of them have homes to go to. Among the poorest, neither parent may reach home from work until 7 or 8: the home is locked up, and the children cannot get in till the parents return. Even if the mother hurries home and prepares a meal for her children, they may still have to put in two or three hours in the streets, while others less fortunate have parents who turn into the public-house on their way home, and remain there, perhaps, until closing hour. To one not habituated to the sight, it is an extraordinary experience to pass through the poorest districts of a large town at night, and to find that there are as many children as adults in the streets, at a time when most children of the middle and upper classes have probably been in bed for hours. There are children of all ages, from infants in arms to grown-up idlers; not a dozen steps can be taken without passing as many children clustering round the lighted shops or hanging round the public-houses, where presumably their parents are drinking. Others wander at their own sweet will; nobody seems to be unkind to them, or, indeed, to take much notice of them; they gather in large groups about the hurdy-gurdies in side streets and dance in a most spirited manner. It is said that some of the stars are given an occasional penny by the organ man to attract an audience, and when the organ moves on the crowd of children follow it to the next street. Gradually the children are claimed by their parents as they appear out of the public-houses to steal away into the night like the Arabs of song, though whether silently or not is a matter which depends upon the quantity of drink consumed. When the mother does not go out to work, the children, of course, have a home to go to when the school gates shut upon them, but the parents may be tired and little inclined to put up with noisy rompings, and are glad to let the children go out of doors where they have room to play. The love of the streets grows on them, so that they lose all love of home. Many a child has heard the chimes at midnight, not once or twice, but many times a week, and, like Justice Shallow, they get into mischief; boys or girls too young and untrained to realise wrong, commit some fault which leads to the reformatory or truant school, and no matter how good their conduct there, these children emerge with the smirch of a conviction which they carry to the end of their days.

No one who has walked through the slums can fail to have been struck by the old, wizened faces of many of the children—faces so careworn and pinched, that if one did not see the tiny body it might be thought they belonged to old men and women. The general belief is that the cause is misery and semi-starvation; doubtless this is true in some cases, but far more often it may be traced to insufficient sleep. They have no fixed bedtime, and are often kept waiting until twelve or one before they can get to bed in rooms almost always ill-ventilated and sometimes underground; or fathers and mothers may come home and disturb the children when they have had the chance of getting to bed early. Again, many parents have to be up very early in the morning, and some children are sent out to do jobs, such as cleaning knives and boots, before they go to school. The number of beds, too, is often insufficient, so that several children must sleep in one shakedown, or even, perhaps without undressing, on the floor, while the infant shares the parent's bed, and—as is mentioned elsewhere—many infants are smothered or overlain. Dr Wynn Westcott, the coroner, has suggested that a desirable form of charitable effort would be to provide cradles for the poor, but, failing this, it would be better to let the infant sleep in an empty drawer, in a hammock, or in the empty orange box that Dr Danford Thomas has often recommended.

It is a disastrous mistake that, with the clanging of the school bell announcing freedom, all control or influence of the teacher—usually the only refining influence ever enjoyed by these unfortunate children, should cease. To allow all responsibility to be thrown off at a moment when it might be most useful, is a very serious flaw in the school system. The shutting of the school gates against wretched children can only be compared to the locking up of churches against unhappy human beings, except during routine hours of service. Lessons according to the Code are all very well, but more important is the moral influence that should be brought to bear by the refined and cultivated upon their less fortunate brothers and sisters.

A ready response to the much-needed shelter from the streets, has been shown in a striking way by the numbers of school children who voluntarily attend Mrs Humphry Ward's summer vacation and evening recreation schools in connection with the Passmore Edwards' Settlement. Evening recreation classes have been carried on at the settlement for upwards of six years. They began with only about 300 children, while now there is a weekly attendance of 2000. The classes are held from 5.30 to 6.30, and the same child is not allowed to attend oftener than three times a week, so that home ties may not be loosened.

The building consists of several airy class-rooms, a gymnasium, and a large hall used as a play-room. Rows of children may be seen waiting outside the gates, two and two in orderly fashion, and keen is the disappointment of those who have to be turned away because the "house is full." In every class-room something different is going on, and it is good to see the excellent behaviour and keen attention with which each subject is listened to. In one room rows upon rows of small children are hearing fairy stories; in the next, perhaps, a drawing class is going on; in others, brush-painting, singing, basket-making is being taught to the boys and needlework to the girls; dramatic classes are held, drill is taught in the gymnasium, and games in the great play-room. This room is most interesting; without any actual division it is separated into two parts, one side being occupied by studious, quiet children, happy reading or looking at picture books, while the other camp consists of those preferring games. The curious feature of this latter class is that it consists chiefly of the real residuum of the slums, children who had to be tamed and civilised first in their own neighbourhood by getting them into the halls of their own school to play, after which they were gradually drawn to the Passmore Edwards' Recreation School. But even now they cannot be got beyond the play-room to the more serious recreation; this will, doubtless, come gradually. Musical games are taught, and Saturday morning is devoted to play in the recreation room. One might imagine that they would become unmanageable, but nothing of the kind. The room is divided into four squares by chairs; there are four lots of coloured badges for the children, and each lady in charge of a square has a corresponding coloured apron. A space just big enough for one child to pass through is left, and as it goes in its name is entered in a register by the lady in charge of that particular playground. Once in, they find plenty of toys and are taught games; at a given moment all the chairs are cleared and there are musical games. One cannot but be impressed by what the moral effect of this gentle discipline—for they are expected to behave well, and are made to understand that it is an honour to be admitted to the school—combined with the refining influence of ladies must mean to these children, who would otherwise be outside playing in the gutter. There is nothing to compel them to attend, and yet some of them turn up year after year and bring their brothers and sisters as soon as they grow old enough. The teachers visit the houses and put themselves in touch with the parents, for whom social evenings are provided in order that they may become interested, and be glad to allow their boys and girls to attend. The classes are easy enough to interest without being a strain, and the same system is employed in the summer vacation school, when there is a simple religious service followed by singing, dancing, drawing, carpentry, story-telling, cooking, musical drill, clay-modelling, and many other subjects.

A special room is provided for the sole use of boys wishing to study quietly. This is a great boon, especially to those who are preparing for examinations.

The discipline in all the classes is excellent, owing to the fact that the children are always pleasantly occupied and managed with kindness and understanding. It is noteworthy that no child has had to be expelled or even punished during the two years the summer recreation schools have been open. We quote from the report of the headmaster of the school in 1903 :—

"The school has for its object the giving of its pupils a good time. Had the children shown signs of weariness or dislike we should have at once deemed the venture a failure, but, as the opposite symptoms were those invariably displayed, we have naturally concluded the school was a success. The school aimed at giving the children something to do in place of roaming listlessly about in street or alley, with nothing to tempt them to action save the ever-present opportunity for mischief. Children such as we had cannot amuse themselves. They have little initiative and imagination, and, as a rule, unless acting under guidance, fail to give their desire for amusement and occupation suitable shape. They roam about suffering from a peculiar childish *ennui*, and actually long for the return of the normal school days and the cessation of the wearisome holidays. The purpose of the school is to change all this. It sought to satisfy the hunger for occupation by setting the children something to find out, or something to do. It sought to care for the physical well-being of the scholars by carefully-organised exercises. It sought to raise the children's ideals of morals and conduct by direct and indirect instruction. It sought to show the children that coming to know and learning to do are, in themselves, some of the truest of pleasures. It sought to afford pleasure chiefly to those children who were doomed from one cause or another to remain in London throughout the vacation and so go sea-less, fresh-air-less, and joy-less."

In order to get the children, application forms were placed in the hands of the teachers of some dozen neighbouring Board and voluntary schools. These forms were filled in and sent back to the settlement, where the remainder of the printed forms, some 1500 in all, were distributed to the applicants themselves. Altogether there were 1681 applications for the 750 places, which it was calculated would give an average attendance of 600. The average number on the rolls was 751. Even in the wettest weather the attendance was never bad, and the scholars were genuinely anxious to come, often standing outside for an hour before the opening of the doors.

Among the subjects taken at the summer vacation schools during the last two summers were: manual training (woodwork for the older boys); housewifery and cookery (for the older girls, and once or twice for boys also); singing, gymnastics (including boxing for the older boys), and musical drill and physical exercises; story-telling (with which was carefully combined a spice of moral instruction); clay-modelling, dancing, nature study (botany and zoology from life); brushwork and drawing; reading-room (story books); dramatics (the pieces prepared were performed before the whole school on breaking-up day); needlework (chiefly doll-dressing); basket work and cane-weaving; lantern story-telling; ambulance work and nursing (even to washing and dressing a baby); swimming (for both boys and girls); and last, but not least, sand digging. Most of these subjects, it will be observed, permitted the students to be actually doing something—that is, they brought into play physical as well as mental activities. With the exception of woodwork, housewifery, needlework, and cane-weaving, each lesson lasted only thirty-five minutes, so as to avoid tiring the scholars. Moreover, the subjects were so arranged that a child, as far as possible, got one lesson in the building and one in the garden alternately. A few children, displaying special aptitude and expressing a genuine desire to take up any one particular subject, were allowed to spend as much time as they wished at it.

For the younger ones, story-telling, building, games, paper folding, cutting and pasting, nature study, chalking, colouring, clay-modelling, soap-bubble blowing, singing, skipping, ship-sailing, and other recreative occupations were provided: this kindergarten was managed by a responsible mistress.

The Inter-Departmental Committee on the Employment of School Children, which reported in 1902, was struck by the need there is in London of providing shelter and occupation for school children, in order to prevent their being overworked as wage-earners, and to remove them from the demoralising influence of the streets. The following is an extract from the report:—

"Consider the case of a boy of 12 or 13, who lives in a poor and crowded home in a town. He is at school five and a half hours daily, on Saturdays and Sundays he is free, and he has from six to eight weeks' holidays in the year. After deducting time for sleep and meals there remains to him at least seven hours on week days and twelve on Saturdays, Sundays, and holidays during which he has complete leisure. If the schoolrooms were open to him, and he had sufficient incentive to study, if there were everywhere public playgrounds and organised games, he might conceivably lead a life approaching that of boys of public schools, which is, at least, a healthy life, even if, in the opinion of some, the vacant hours are too long, and the inducements to idleness too long. But the poor boy . . . has in most large towns only the alternative of playing or loafing in the streets, or of moping in dull rooms in a crowded tenement."

In summing up the Committee directs attention to "the absence in the large towns of adequate means of physical recreation for children. We have again and again put the question, 'What would these children do if they did not work?' and again and again found that the only other active mode of life open to them out of school is running the highways or 'playing weird games in back streets.'"

An association called the Children's Happy Evening Association, of which Lady Jersey is President, has been carried on for fourteen years and has 113 branches in London. Its object is to make the early years of children happier, and to teach them to play and amuse themselves in a healthy and orderly manner. They attend voluntarily in clean, well-lighted schoolrooms which form a pleasant contrast to the streets. Toys are provided and games are played, but the Association does not aim at instructing children, beyond teaching them to behave with courtesy and to play fair. It is sufficient that the children are out of the streets and under the influence of ladies, which must have a refining effect on them. Each child attends once a fortnight only.

The School Board has granted the use of schoolrooms for the "evenings," and it is claimed that owing to the movement the day-school attendance has been very materially improved, as admission to these recreation classes is made dependent on the regularity of attendance at school.

It might not be easy to establish an ideal recreation school, such as that of Mrs Humphry Ward, in every crowded neighbourhood, yet something ought to be done on those lines, and recreation schools, even if less perfect, established all over London and other large towns. It might have seemed hopeless to move a large body like the London School Board, but here is an opportunity for the new educational authorities to accomplish this sorely-needed reform. At first sight the suggestion may appear Utopian, but when it is carefully considered, it will be seen that the difficulties in the way are less formidable than they look. If even one authority were to make up its mind to work the scheme thoroughly, it would be a pioneer to the remaining districts. In each school two or three at least of the smaller schoolrooms should be thrown open in the evening, and where a large hall existed it should be used, under judicious discipline, as a play-room in which slum children, without an idea of how to amuse themselves, could be taught interesting games. Part of the time could be devoted to physical exercises, while there should be a quiet corner and well-chosen books for those disinclined to join in the games. In the smaller rooms light occupations, tending to cultivate the taste without fatiguing the brain, could be organised. The occupations should be chosen with a view to allowing the children to stand or move about, for the many hours in the day they have to remain sitting in schools should always be borne in mind. The evening would afford excellent opportunities for cooking classes which do not necessitate much brainwork, and for simple useful object lessons. One small room could be reserved for the really studious, where they might find absolute quiet and study without interruption. This would be an inestimable boon to lads and girls who have to work for examinations, and who find it impossible for various reasons to do so at home.

In the report on Mrs Humphry Ward's recreation classes, it is stated that the object of the school is to give its pupils a good time. This is a happy expression, for the secret of happiness is to be employed, and none appreciate the delight of being interested and occupied so keenly as those who have previously spent an aimless life.

In Manchester and Salford, a Practical and Recreative Evening Classes Committee holds classes after school hours in schools and mission halls in most of the poorer districts. Musical drill appears to be specially popular, but classes are also held in such subjects as basket-making, chip carving, bent iron work, marquetry, and plain sewing. There are special domestic economy classes where sick nursing, cookery, dressmaking, and millinery are taught.

In London a great deal of good has undoubtedly been done by boys' clubs, carried on in connection with University settlements — or independently. They not only keep the boys away from the manifold contaminations of the streets, but give them healthy physical exercise and healthy mental recreation, while bringing them under the influence of the high ideals by which those who conduct these classes are actuated. If more boys belonged to such clubs, there would be less hooliganism.

Though evening recreation schools yield results of inestimable value, they could be run at a small cost. There would be merely the lighting and heating of the rooms in winter, and the salary of a few teachers to assist voluntary workers, for the movement has only to be started to find support. The Passmore Edwards' Settlement Recreation School, with its 750 children in daily attendance, is managed for a little over £200 a year; it is, therefore, not unreasonable to urge, that to shirk this duty any longer will be a slur on any educational authority not wishing to acknowledge itself unable to see every side of the education question. In those places where a system of evening recreation classes is not established, it will, perhaps, be wiser to close the schools for the afternoon and to reopen them after tea from 5 to 8, care being taken to get through all the more difficult lessons in the morning, reserving the less fatiguing for the evening classes. Under this system, the children would, at least, run less risk of danger to their health if they played about the streets by daylight instead of by night.

The system of school holiday colonies, originated by Pastor Bion of Zurich appears to be worthy of encouragement. Under it the children in primary schools are sent out of the streets in towns during their holidays, to enjoy the healthy surroundings and pure air of the country or the seaside. The scheme has rapidly spread in different countries, and already Germany, in 1901, had 171 school colonies, while 10,000 children are sent to the country from Copenhagen alone. In Switzerland, where facilities are great in every town, societies exist; while France* has 50 managed by private initiative or by the municipality. In this country something has been done in the same direction through philanthropic effort, by means of boys' camps and the boarding-out of town children. The exact results of this change of air during holidays have not been very clearly ascertained, but from the figures collected by Vuillermaz relating to Lyons, and from researches at present going on in the physiological laboratory of the Medical Faculty of Toulouse, on the modification of the composition of the blood and of its globular richness in the young Toulousians sent to the mountains, definite information may be expected. It may, however, be concluded that children receive real and striking benefit from the change, and Lazourdy and Serison point to the method as a prophylactic defence against consumption. The movement has the advantage of costing very little money. The average expenditure per child may be reckoned at from 30 to 40 francs, including travelling expense, for one month's sojourn in a family (generally selected because it is respectable).

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* Guiraud, *Manuel Pratique d'Hygiène.* Paris, 1903.

CHAPTER XVIII

CONCERNING MILK

"The greatest darkness is ignorance."
SHAKESPEARE.

Cow's Milk the Staple Artificial Food for Infants. Defects in the existing Milk Supply. Their Remedy. Infant Milk Depôts.

AFTER a careful study from every point of view of the causes of physical deterioration, it is impossible not to be convinced that upon the question of feeding during infancy and early childhood, turns the whole subject. If every child were judiciously fed until the age of, say, three or four years, they would, in all probability, grow up into robust men and women. If, on the contrary, up to that age they are improperly fed, no amount of after-care will ever make up for those first years of neglect.

Unfortunately no one in this country seems to have realised this, and each reformer rushes like a bull in a china shop at his or her special reform, and utterly passes by the root of the evil. Statistical evidence shows that mortality in the first year of life is excessive, and is due to diseases of the digestive organs caused by improper feeding.

The best food for infants is the natural, but for various reasons many are fed artificially. Mrs Greenwood, chief lady inspector of the Medical Officer's Department, Sheffield, stated not long ago, at a public conference on infantile death-rate, that statistics for 1900 showed that where 25 women suckled their children, 200 fed them artificially.

Now if artificially meant a mixture of pure milk and pure water of strength suited to the age and constitution of the infant, administered regularly in a clean bottle, this state of affairs would not be so serious. But when it is realised that cow's milk, as it reaches the infant of the urban labourer, is more often than not in such a putrescent state as to be poisonous, and in the case of the rural labourer's child, that there is none to be obtained for it (the bulk of the country milk being despatched to towns), it will no longer be found surprising that infant mortality is great.

There are two things for the reformer to do: one is to provide clean milk for the children of the labouring classes, while the second is to instruct mothers how to feed their babies wisely.

Milk is the recognised staple food of infants and small children; if these children are to grow up to be strong men and women, fathers and mothers of future generations, and if their physique is so impaired by bad milk as to cause many to die and more to grow up unfit, the question becomes, not one of individual philanthropy, but of national obligation.

Because farms have been allowed to continue in their antiquated and insanitary methods for centuries, it does not follow that now, in an enlightened age when the most grave consequences are to be traced to unclean milk, that we should persist in them. It is one thing to administer poison through ignorance, and another to give it knowingly, and what is being done amounts to that. There are not even the extenuating circumstances of special difficulties or great expense to be pleaded, for in starting a model dairy farm the initial expenses are small, while when worked the profits are far beyond those obtained by the farmer of prehistoric methods.

The description of a scientifically worked dairy farm may help to dispel the almost superstitious belief of the British farmer, that manure and general neglect are as necessary to the production of good rich milk, as the air they breathe is to human beings. Such a farm is now working near York. It is conducted by Mr Sorensen, who was induced to embark in the enterprise mainly to meet the needs of an infant milk depôt which Mr Seebohm Rowntree had resolved to establish. The soil is not remarkable, the climate of Yorkshire is not specially well adapted to dairying, and the farm buildings when taken over were not very much better than the average. Certain structural alterations, not of very great magnitude, were made in the buildings and especially in the stalls, but there was no great capital expenditure. The success which has already been achieved is due to the application of the principles of scientific milk production established by the Copenhagen Milk Supply Company, which is well known to be the most perfectly worked dairy company in the world. The dairy farm near York is worked on the same lines with this advantage, that Mr Sorensen supplies milk from his own herd of cows only and supervises everything himself.

The first principle is that milk should, with common care and cleanliness, be produced in such a manner as to be drunk in all confidence by the public without any necessity for pasteurisation or sterilisation. The essentials, he considers, for such a milk supply are, briefly :—

1. Healthy, properly fed and housed cows.

2. Cleanliness from A to Z, and a responsible guarantee that nothing is added to or extracted from the milk.

3. Prompt and thorough cooling of the milk so as to prevent germ growth.

4. Delivery under hygienic conditions.

These conditions are all fulfilled at this farm. A veterinary officer of experience inspects the cows every month, and is empowered to dispose of any unhealthy or suspected animal. The feeding of the cows is scientifically carried out. No brewers' grains, turnip tops, or other unsuitable foods are used; the hay, mangolds, etc., are grown upon the farm, while water from the York city water supply is used for drinking, and also for washing the utensils, etc. The cowshed, containing 50 well-groomed cows, is lofty, well lighted, and ventilated, and the platform on which the cows are tethered is short, so that their hind quarters do not rest on the ground, but over a drain which carries away the excreta. The cows are thus prevented from rolling and soiling themselves during weather too bad for them to remain out.

In the cowshed is a simple wash basin fixed against the wall, with towels beside it, while the clean smocks worn by the milkers during milking hang on pegs. The simplicity of all the arrangements is striking. No money wasted on fancy fittings which increase the cost without making the milk any better. The aim is to keep everything—from the cows to the smallest utensils—fresh and clean. The cans, etc., are cleansed with live steam from a high-pressure boiler.

After the cows are milked, the milk is cooled by allowing it to flow over a corrugated cylinder, inside which cold water and ice are passed, in order to reduce the temperature in a few seconds to a point unfavourable to germ life. Clean milk so treated will, without preservatives, remain sweet, if kept in a cool place, for several days.

Most of the milk is delivered in glass bottles, which are filled and sealed at the dairy, the rest being sent out in cans, also filled and sealed at the dairy. There is a third method of sending out the milk in a sealed can with a tap.

The financial result of the theory preached, that to conduct a dairy farm cleanly and scientifically does not cost more than to run a filthy one, has been satisfactory. It is true that in this case the producer has the advantage of supplying his milk to the consumer direct in his own carts, and thus has no railway charges to pay, but the demand has grown so rapidly that twice within the first year it was found necessary to raise the retail price to new customers.

If the educated classes are willing to accept ordinary milk for their children, the uneducated poor can hardly be blamed for giving it without question to theirs. Whether it is from instinct or from the fact that many cannot afford what is sold as fresh milk, it is certain that numbers of the labouring classes feed their infants on condensed tinned milk, mixed with water, not realising that many brands are made from separated milk and contain a very small proportion of fat, which is an essential constituent of an infant's diet. They also largely give them prepared tinned foods which chiefly consist of starch, raw or cooked. These cause rickets, with its accompanying evils.

In France the question arose in much the same way as it has arisen in this country, when allowance is made for the difference between conscription and voluntary enlistment, and medical men and philanthropists, when they realised that infant mortality and weakness was due to improper feeding and a bad milk supply, set to work to remedy the evil. Milk depôts were established in Paris and in many provincial towns to supply sterilised milk for infants. By the results of these various enterprises it has been proved without doubt, that milk depôts under medical supervision are far more valuable in their results than those established by philanthropists for the mere purpose of selling sterilised milk.

After studying the various systems in Paris, one is bound to see how ideal a system like Professor Budin's is. As physician to a maternity hospital, he keeps all the children born there under his supervision for two years after the mothers leave. Every effort is made to persuade the mother to nurse her baby herself, but if owing to ill-health or from other reasons she is absolutely unable to do so, she can obtain sterilised milk at the hospital. She sends daily to the hospital and receives a number of bottles, each containing enough milk for one feeding, the doctor deciding the strength and quantity according to the age and state of health of the baby.

Every mother is obliged to bring her infant regularly once a week to be weighed and seen by the medical officers, who, after a careful examination, are able to decide whether the child is thriving on the food, and are also able to diagnose disease in its earliest stages.

The results are excellent; in the forty-nine months, ending 1st April 1902, there were no cases of gastro-enteritis, and only 23 deaths among 527 infants, or an annual death-rate of 10·6 per 1000.

In the institutions called Surveillance de Nourissons maintained by the Conseil Général de la Seine, and administered by the Assistance Publique in Paris, many of the infants treated are already ill, and so the task is a hard one. Still the results, though nothing like Professor Budin's, fully justify the experiments; and the same can be said of the Gouttes de Lait worked on a commercial basis and paying a dividend, which is applied to extending the system throughout all the poorest quarters of Paris. This work is directed by Dr Henri de Rothschild, who is devoting his life to the saving of infants. All the milk supplied comes from a farm belonging to the organisation itself, and managed under skilled supervision on scientific principles. The distinguishing feature of all these institutions is the system of medical supervision. The distinguishing feature of our milk depôts at Battersea, Liverpool, St Helen's, and elsewhere, is the endeavour to prevent by sterilisation the further decomposition of milk obtained from a source known perhaps to the dealer, but certainly not to those responsible for the lives of the infants fed upon the milk served out from the depôt.

It is astonishing to find that these depôts continue to be established, in spite of all that has been written on the subject in medical and other papers. If even the milk came from scientifically managed farms, some benefit might be reaped in return for the large expenditure of public money. But when children's and other hospitals are content to give their patients milk coming from an uncertified source, it is, perhaps, too much to expect municipal philanthropists to inspect the farms which supply them with milk for their schemes.

A scientifically managed depôt does not necessarily mean that large sums of money should be expended upon it, any more than a scientifically managed farm means expensive buildings and outlandish appliances. But it is of the first importance that every depôt should be under medical supervision, and that the milk used in it should come from a special farm scientifically managed and under its own inspector. It should be connected with a hospital, and failing accommodation in the hospital, the situation chosen must be close to that institution, the side of the street with the most traffic being the best. A small shop should be rented with a shed behind, to be converted into a room to contain the steriliser and the engine. There must be a yard, while the rooms required would be the shop for distribution; the scullery and kitchen fitted with a bottle-washing tank and brushes. Here the empty bottles could be stored. In the shed above mentioned the bottling and sterilising of the milk would take place.

Too much stress cannot be laid upon the importance attached to the selection of the manageress. It has been found possible, by wise selection, to run a depôt having five or six branches with one head woman, one assistant—these two receiving £25 a year each, with free quarters over the shop—and a charwoman once a week to do rough cleaning, whereas, in most of the municipal enterprises, double or treble that number are employed and much higher wages given. A sensible, well-educated, enthusiastic manageress has it in her power to encourage parents to employ the milk, and can give them much useful help and advice when they are in small difficulties.

The cost of appliances requisite to start a milk depôt on a moderate scale would be about £150. Further capital expenditure necessary would depend upon the character of the alterations necessary to convert the house selected to its new purpose. The total capital expenditure should not exceed £300 to £400. The annual expenditure will depend upon rent, rates, and taxes of the house, the price paid for the milk delivered at the depôt, and the wages of the employees.

It is obvious that branches should be established, to enable people living a long way from the main depôt to buy milk. This can be done without expense by getting the small milk retailers to sell the sets of prepared and sealed bottles sent down from the main depôt. These agents should receive 5 per cent. on their sales, with a guaranteed minimum of 1s. a week. This plan works well at York, where also a small milk dealer is employed to deliver from the head depôt to the small shops. For the use of his time and cart he receives 15s. a week. He also collects the empty bottles and brings them back to the main shop.

The sale of milk should be arranged as follows:—A card of seven tickets is paid for in advance by the mother: this costs 1s.6d. or 2s., according to the age of the child and strength of the mixture, and should last one week. One of the tickets is handed in each day by the person who fetches the milk. Once a week the branch depôts send to the main shop stating on a card particulars as to the daily supply required. When the supply is sent, a check list goes with it which has to be signed by the assistant at the branch shop, while a duplicate taken on lead paper is retained at the head depôt for verification.

If the depôt is run in connection with a hospital there will be two classes of infants:—I. Out-patients who already attend the hospital once a week. The mother should be required to present her milk-depôt card to the out-patient sister, who should weigh the infant and enter the weight in a register, and again on a card, which should be handed to the medical officer whose duty will be to regulate the amount and the strength of the milk on the card, according to the progress of the infant. II. Children who are not attending as out-patients. They should be weighed once a week or once a fortnight at the depôt, the weight to be entered in a register and on a card; if they do not gain weight at the normal rate they should be referred back to the doctor who sent them. Mothers should be instructed and nurses should interest themselves, when possible, and visit the homes, especially at first, and the help of ladies should be enlisted too.

In case of a mother beginning to take the milk from the depôt, and having through want of means to leave off, the milk should not be supplied *by the depôt* free; but charitable people might be told of deserving cases, and give tickets to such.

At Battersea an arrangement has been made with the Board of Guardians, whereby the relieving officer is empowered to issue weekly orders for milk in lieu of giving money in outdoor relief.

Careful records should be kept, for at Battersea and other places the only means they appear to have of judging of results is that "statistical evidence would appear to show that it may have had beneficial effects upon infant sickness and death-rate." This is not sufficient. Another flaw is that their milk merely comes from milk dealers.

If any real good is to be done, the milk should be supplied direct from the farm, which should be under scientific management.

It would be advisable to begin on a small scale and gradually extend the supply of milk.

The same results can be obtained by simple fittings so long as scrupulous cleanliness is observed. Mothers should be impressed with the fact that it is a *favour* for them to be supplied with the milk, and upon any breaking through rules, such as the weighing of their children, they should be refused as customers.

It should be borne in mind that the object of a depôt, especially one conducted by a hospital, is to instruct mothers, far more than to sell milk. These should be encouraged to nurse their infants when possible, and should be helped to that end in every way, by help of meat, food, etc., and leaflets. A leaflet containing simple rules, clearly expressed in plain language, for the feeding and general management of their infants, should be first explained and then handed to each mother. The chance of gaining practical experience should be eagerly seized by young doctors who are ambitious to gain a thorough knowledge of this most important department of their profession.

While it is clear that a great responsibility lies upon the medical profession to study the subject and to press upon public attention the need for reform in our present slovenly methods, mothers and housekeepers really have the remedy in their own hands. If they would not permit themselves to be beguiled by the innocent white-tiled shops, where the poison lurks concealed in fair jugs and vessels, but had the intelligence or the moral courage to inspect the farms which supply these shops, very few insanitary farms could survive. Nor would it be possible for our rural sanitary authorities to continue to sleep, like so many Rip van Winkles, while the dairy industry is advancing by leaps and bounds in other countries. If their slumbers continue, a rude awakening awaits them.

Already Denmark, France, and other countries supply a great part of the butter consumed in England, and those who have watched recent developments know that a cloud no bigger than a man's hand hangs in the milk firmament, and threatens a deluge of foreign milk.

CHAPTER XIX

CONCLUSION

> *"There is a tide in the affairs of men,*
> *Which, taken at the flood, leads on to fortune."*
> SHAKESPEARE, "Julius Cæsar."

In the course of the inquiry, the details of which have been set forth in the preceding chapters, it has been necessary to lay stress on the flaws in our system of elementary education in relation to physical development. This was inevitable from the nature of the inquiry. It would be manifestly unjust to condemn the system on account of certain defects which can be removed. It is, however, essential that they should be removed if the best results are to be obtained even from the point of view of mental education, practically the only aspect of the subject present to the mind of the great statesman who passed the first Act rendering education compulsory. It would be ungrateful to complain that he and his co-workers did not foresee all the consequences of bringing the whole of the child population on to the school benches, inasmuch as such foresight would have meant the foretelling that the migration from country to town would proceed at an ever-accelerating rate. Compulsory education is one of the greatest boons bequeathed to us by the last generation. It is for us to grasp it in its entirety, by realising, as did the Greeks, that for a complete education, physical and mental training must go hand in hand.

In the same way it has been necessary to dwell on the evil habits, the ignorance, and the sloth of the town population; on the squalor of their homes and on the neglected children of the slums. But it would be a gross libel on the poor not to recognise that many—perhaps the majority—are steady, hard-working people, doing their duty according to their lights. Many mothers among the very poorest of the poor are far more devoted to their children than many of the rich; and their devotion means usually much greater personal sacrifice; sacrifice of all opportunities of amusement or recreation, sacrifice of sleep, and often of food. It means continuous toil from morning till night during the best years of the lives of these admirable women: the pity of it is that their efforts are not always well directed. They need guidance; the girls who will be the mothers of to-morrow need instruction in domestic economy, and the rearing of infants: instruction, not given grudgingly as of necessity at a few "centres," but in all schools in every district.

We have seen from statistics that among young men and lads who seek to enter the Navy and Army, a most disquieting proportion are found to be unfit, and that there are good grounds for believing overcrowding, defective housing, insanitary surroundings, insufficient and unsuitable food, as well as defective physical training in childhood to be the chief causes of their unfitness. Further, the slight amount of anthropometric evidence available points to actual physical deterioration among children in the poorest quarters.

It has been shown that the proportion of the population dwelling in towns is steadily increasing, and that, in fact, almost the whole of the increase in England and Wales which took place between the census of 1891 and that of 1901, was an increase of the urban population. It follows that the conditions of town life having an injurious influence, affect year by year a large part of the whole population, and that the average physique must therefore continue to deteriorate at an ever-increasing rate unless means be taken to counteract these influences by better nurture of infants, greater attention to physical culture, better food and housing, and improved sanitation generally.

To account for the heavy mortality and disease in infancy, it has been pointed out that the milk available in towns for many infants who must be reared artificially is unsatisfactory. Pending improvement in the general conditions of milk production, the remedy most immediately available is the establishment of infant milk depôts to supply clean, fresh milk straight from scientifically managed farms, and that the infants should be fed, under medical supervision, all through the first two years of life.

The period covered by compulsory education has coincided with that during which the migration of the country population to towns has gone on most rapidly, and, therefore, any defects in school management in towns must affect an ever-increasing proportion of the children of the country; among such defects inadequate ventilation, long hours of mental work without recreation or physical exercise, and the risks of infection uncontrolled by medical inspection have been enumerated. Attention has been directed also to the fact that many children attending school are insufficiently fed, and, therefore, not in a condition to reap the full benefit of the school instruction; while the importance of providing the town children with systematic physical training, is generally admitted from the facts collected, also that the system followed must be carefully planned and carried out under skilled supervision.

A large field of work is open to the new educational authorities, in the establishing of evening classes, where the children may gather, and be taught how to spend their leisure in an orderly and pleasant way. It has been found, by those interesting themselves in that particular branch of work, that boys' clubs and drill classes are instrumental in getting bigger boys in from the streets and in checking hooliganism. Here, as well as by simple teaching in elementary schools, an abhorrence of drink might be instilled. As the better classes of town labourers migrate to the suburbs, the element remaining behind becomes more and more a slum residuum, and any movement tending to refine the submerged masses cannot be too much encouraged.

The Royal Commission on Physical Training in Scotland found, that most of the witnesses examined were agreed that physical training was of the greatest importance, yet its recognition as a prominent branch of a liberal education appeared to be theoretical rather than practical. This the Commission stated was clearly shown by the amount of time allotted to it in school time-tables; as a rule this amount would be half an hour a week, although in some exceptional instances it had been found possible to devote three hours a week to physical training without detriment to the ordinary work of the school. In their final summary of recommendations, the Commissioners made the following observations with regard to elementary schools: "The improvement with regard to physical training will be brought about chiefly by a more intelligent conception of the proper aim of education, by recognition of the fact that the education cannot be based on sound principles which neglects the training and development of the bodily powers, and by judging results as they are shown over the whole of the school life, and not by short portions of that life. The school life should cover a larger part, not only of the working time, but also of the recreation of its pupils."

The tendency of the rural population to leave the country, and to seek their fortunes in towns, where too often they become casual labourers or swell the number of the unemployed, has been shown to be, in part at least, due to removable causes. Chief among these is the character of the education given in rural schools. A system wise for town children is the height of unwisdom for children whose destiny it ought to be to work in the fields. The means which have been suggested to retain the labourer on the land, would directly increase national prosperity, and diminish the risk now run owing to the fact that so large a proportion of our food supply is imported from foreign countries.

The more carefully the facts lying at the root of the physical unfitness admitted to exist among the youth of the country are examined, the more clearly does it appear that the matter is one of vital importance to the future of the race and of the nation.

The true moral of the whole is well expressed in Lord Rosebery's words:

> "An Empire is but little use without an
> Imperial race."

APPENDICES

APPENDIX I

REPORT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND ON THE PHYSICAL DISABILITY OF RECRUITS FOR THE ARMY

The following is the text of the report adopted by the Council of the Royal College of Surgeons of England, on 15th October 1903, as a reply to the inquiry addressed to the Council by the Secretary of State for Home Affairs:—

"The Council of the Royal College of Surgeons of England have carefully considered the Circular drawn up by Sir William Taylor, Director-General of the Army Medical Service, on the physical deficiencies of the men who offer themselves for enlistment in the Army; and now beg to submit, for the information of the Secretary of State, the following observations in reference to those matters upon which their opinion is invited, namely: (*a*) the necessity of a proposed inquiry into the causes of physical deficiency, and as to the best available means of remedying defects and improving the national health; (*b*) the ground to be covered by the Commission if appointed; and (*c*) the composition of the Commission.

"It is premised in the Circular of the Director-General that, while there is reason to believe the physique of the well-to-do classes is improving, 'a very large proportion of the men who offer themselves for enlistment in the Army are found to be physically unfit for military service': and there seems to be a presumption that the proportion is increasing. But the statistics set forth in the Circular do not support this view: and there is no indication that the figures are affected by any change in the standard of physical requirements in recruits during the period under consideration. Nor does it appear that there has been any noticeable change in the personnel of the candidates for enlistment during this period. In the opinion of the Council, however, there are reasons for believing that, compared with former times, most of the men who now offer themselves as recruits are drawn from a class physically inferior, and that a general statistical statement may be, therefore, misleading.

"Many influences have been at work during recent years to affect the status of the working classes. Increased competition in trade, keener industrial rivalries, the growing responsibilities of employers, the 'labour movement,' trades-unions, and other social and economic factors have altered the conditions of labour, and raised at once the comparative standard of efficiency of the workmen, the standard of living, and the rate of wages. In the struggle for employment the better educated, the more intelligent, and the more active and industrious are attracted to the better paid and more coveted occupations. The result is a large, and probably growing, remainder of those who, more or less unfit, fail to obtain regular employment. And it is apparently from this residue that the Army has to obtain the larger proportion of its recruits.

"Disquieting though this reflection may be, there is no evidence before the Council that the physical disabilities of this class, taken by itself, have increased or are increasing. Indeed, the data supplied by the Circular itself seem to show that they have not increased, but rather that they may tend to diminish.

"From Table I., p. 2, it would appear that when recruits belong to a class which may be regarded as first-hand material, namely, 'boys under 17 years of age,' the proportion of rejections is only 11·2 per cent. Considering the probable parentage and the early surroundings of these youths, and considering also the numerous possible physical disqualifications, this cannot be regarded as a high rate of rejection. Moreover, this class of recruits affords a fair criterion of the average physique of the lower stratum of society. And it is also this class of recruit which should manifest most improvement under the favouring conditions of better food, better housing, and better surroundings and associations after enlistment.

"Again, Table II., p. 3, shows a steady declining rate of primary rejections from 40·6 per cent. in 1893 and 41·6 per cent. in 1896 to 27·4, 28·0, and 30·7 respectively in the three years 1900-2. Against this is to be set a sharp rise in the years 1901 and 1902 in secondary rejections—that is, rejections within three months of enlistment and after two years' service. The causes of these secondary rejections are not stated ; but it may not unreasonably be assumed that many of them were due to preventable causes, physical or moral.

"As bearing generally on the larger question of national health, and more particularly on the physique of those who offer themselves as recruits, Table III., p. 4, is not without some hopeful indications as to the future. The table shows a diminishing proportion of rejections in each of the assigned grounds of disqualification, excepting that of 'loss or decay of teeth.' In such a critical test of physique as 'chest measurement' the rejections, which were 139·64 per thousand in 1896, were only 49·88 and 56·72 respectively in the years 1901-2. 'Imperfect constitution and debility' caused 18·40 per thousand rejection in 1891, and only 8·36 and 3·91 respectively in the years 1901-2. On the other hand, the rejections due to loss or decay of teeth, which were 10·88 per thousand in 1891, had risen to 49·26 per thousand in 1902.

"The Circular does not state whether or not there has been increased stringency of late in the matter of the teeth, or relaxation with respect to the other physical and vital requirements. In the absence of any statement to the contrary, the Council assume that no material alteration has been made. In any case the Council believe that many of the causes of disability will tend to grow less. Greater attention is now paid in schools to the general health of children, to physical training, to the care of the sight, the hearing, and the cleanliness of the mouth and teeth. And the spreading influence of the various social, municipal, and philanthropic agencies for the promotion of the public health, and the strengthening of the character of the individual, cannot fail to beneficially affect the health and well-being of all classes of the people, including the lowest.

"It may perhaps not be altogether irrevelant to remark that many of the grounds of physical disqualification for the English Army—such as defects in vision, weight, height, and teeth—would, in countries where conscription obtains, be much less important factors in judging of the fitness of men for military service.

"The Council desire to state that while they have thought it right to scrutinise the data supplied in the Circular prepared by the Director-General, they have not done so in a captious spirit, but rather to illustrate the difficulty they have experienced in forming an opinion or in making any definite recommendation. They cordially recognise the immense importance of the matters to which the Director-General has called attention and the skill and clearness with which he has collated the facts upon which his opinion and recommendations are based.

"On the evidence before them and in view of the testimony of the public-health statistics, the Council do not think there is need for a large inquiry into the national health, and they are doubtful whether trustworthy results would be obtained by instituting a special inquiry with respect to the class from which most of the recruits are obtained. The Council are, however, of opinion that much might be done in a less formal manner by emphasising the necessity of still stricter attention to the health, feeding, and training of school children, and more especially the care of the teeth and the arrest of threatened or early decay.

"The Council also are of opinion—upon which opinion they would lay great stress—that as much as possible should be done to promote the health, growth, and general physical development of the young soldier by improving his environment, and by the exercise of special care in the selection of the kind and quality of his food, and in its preparation and preservation.

"Should the Government decide to institute the larger inquiry into the national health, or the more limited one dealing chiefly or solely with the class supplying the majority of recruits, the Council would suggest that, in addition to military men, the Commission should contain employers of labour, representatives of the working classes, persons who have specially studied matters relating to public health, and members of the medical profession. With respect to the last named, the Council would be pleased, in conjunction with the Royal College of Physicians, to nominate representatives specially acquainted with the subject-matter of the inquiry."

A further report made by the Royal College of Surgeons on 14th January 1904 is as follows:—

The following letter was on 14th January 1904 addressed, by the authority of the Council of the College, to the Chairman of the Departmental Committee on Physical Deterioration:—

"SIR,—With reference to your letter of the 1st instant, forwarding a copy of a further memorandum prepared by the Director-General of the Army Medical Service, together with four tables of figures giving more detailed statistics as to the percentage of rejection of those who have offered themselves as recruits, and as to the causes of the rejections, the Council of the Royal College of Surgeons beg to make the following observations:—

"The Council note that the Director-General thinks 'that the idea of "progressive physical deterioration" has occupied a much too prominent position in the minds of those who have had to consider and report as to the advisability of inquiry being necessary,' and they also note the statement that the intention of his original memorandum was to call attention to 'the most disturbing fact that from 40 to 60 per cent. of the men who present themselves for enlistment are found to be physically unfit for military service,' and not to suggest there was evidence of a 'progressive physical deterioration of the race,' concerning which there are no trustworthy 'statistical or other data.'

"With reference to these remarks of the Director-General, the Council desire to point out that in their report to the Home Office they did not use the phrase 'progressive physical deterioration,' though some of their criticisms did assume that the first memorandum of the Director-General seemed to suggest the idea of progressive physical deterioration among certain classes of the community.

"While, therefore, the Council may not in every respect have interpreted quite accurately all the meaning and import of the Director-General's first memorandum, their opinion was in no sense based upon a misunderstanding as to the main question at issue; and they are entirely in accord with the Director-General in believing that the two principal matters now to be considered are, first, an inquiry into the causes and present extent of the physical unfitness for military service that exists, in a large degree, among certain classes of the population; and, secondly, the institution of measures which may bring about an improvement of the physique of the classes from which most of the recruits are at present drawn.

"The Council believe that, in addition to any other means which may commend themselves to your Committee, the adoption of the precautions and supervisions indicated in the Council's previous report would contribute not a little to the physical and moral improvement and well-being of the classes concerned.

"In conclusion, the Council beg to state that, after a careful perusal of the supplementary information now supplied, they see no ground to modify the opinions which they have previously expressed upon the subject of the physical disability of many of those who offer themselves as recruits.

"I am, Sir, your obedient servant,

"JOHN TWEEDY,
"*President.*

"A. W. FitzRoy, Esq.,
"Privy Council Office."

APPENDIX II

CAUSES OF REJECTION OF RECRUITS (ARMY)

The following Table is taken from the "Memorandum by the Director-General, Army Medical Service, on the Physical Unfitness of Men offering themselves for Enlistment in the Army," presented to Parliament in 1903. (Cd. 1501.)

Causes of rejection of recruits on inspection, with ratio per 1000, 1891-1902.

Cause of Rejection.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.
Under Chest Measurement	93·03	95·90	108·55	110·27	126·38	139·64	89·44	73·88	65·84	59·84	49·88	56·72
Defective Vision	40·35	42·35	41·51	42·90	39·88	40·72	41·15	42·64	41·99	36·42	35·84	39·23
Under Weight	32·47	27·62	39·99	39·61	36·58	35·95	45·58	34·82	33·84	28·52	25·15	21·72
Under Height	26·76	32·71	33·24	28·67	28·72	28·77	24·86	21·79	20·21	15·18	13·56	11·59
Imperfect Constitution and Debility	18·40	9·87	9·47	5·00	3·57	4·44	4·45	5·49	5·82	4·94	3·36	3·91
Disease of Veins	16·39	16·24	17·11	15·84	15·85	15·72	15·42	15·74	14·22	11·69	13·98	12·30
Disease of Heart	16·06	13·87	17·74	19·62	20·71	18·76	17·67	17·26	15·69	13·15	16·74	17·33
Defects of Lower Extremities	15·57	17·09	14·40	17·44	18·16	18·14	18·12	17·72	13·98	10·53	10·35	12·27
Varicocele	12·93	11·85	12·85	14·25	12·28	13·07	13·07	12·29	12·16	11·21	13·89	12·59
Flat Feet	11·04	9·83	12·45	14·71	13·16	17·81	16·79	12·24	12·31	9·02	11·66	12·44
Loss or Decay of Teeth	10·88	14·56	15·33	16·26	17·95	19·75	24·16	26·34	25·29	20·02	26·70	49·26

APPENDIX III

PHYSICAL DEVELOPMENT OF SCHOOL CHILDREN

The following Table summarises Dr Hall's examination of 2704 Gentile and Jewish Board School children from 6 to 13 years of age. He says:—

It is evident that the poor Jew is 3 lbs. heavier and 2 inches taller at 8 years of age than the poor Gentile.
6¼ lbs. ,, 2½ ,, 10 ,, ,,
7 lbs. ,, 2¼ ,, 12 ,, ,,

Finally, from 6 to 13 years of age, the poor Jew is much less rickety, and has much better teeth.

Boys and Girls (whole schools taken).

Board Schools.	Age.	Number Examined.	Average Weight.	Average Height.
			Lb.	In.
Good District Gentile School	7	91	48·0	47·25
Poor District Gentile School		62	45·5	44·75
Good District Jews' School		75	47·0	46·50
Poor District Jews' School		91	49·33	45·0
Country School		57	49·0	47·0
Good District Gentile School	8	114	52·75	49·0
Poor District Gentile School		113	50·25	44·75
Good District Jews' School		102	53·0	48·50
Poor District Jews' School		121	53·5	47·0
Country School		65	52·0	49·0

Good District Gentile School	9	118	56·0	50·25
Poor District Gentile School		97	51·5	47·25
Good District Jews' School		86	56·75	49·75
Poor District Jews' School		84	59·0	49·50
Country School		74	54·25	50·50
Good District Gentile School	10	116	60·33	53·0
Poor District Gentile School		100	57·75	50·0
Good District Jews' School		94	62·33	52·75
Poor District Jews' School		100	64·0	52·50
Country School		63	60·50	52·50
Good District Gentile School	11	86	66·25	54·25
Poor District Gentile School		120	61·50	51·50
Good District Jews' School		79	66·0	53·75
Poor District Jews' School		95	67·0	52·33
Country School		62	64·0	53·50
Good District Gentile School	12	72	72·0	56·17
Poor District Gentile School		127	69·0	53·75
Good District Jews' School		71	77·0	56·50
Poor District Jews' School		107	76·0	55·0
Country School		62	75·0	56·0

	Rickets.	Bad or Backward Teeth.
Good District Gentile School	8 per cent.	38 per cent.
Poor District Gentile School	50 ,,	60 ,,
Good District Jews' School	5 ,,	11 ,,
Poor District Jews' School	7 ,,	25 ,,
Country School	11 ,,	33 ,,

The poor district Gentile schools and the poor district Jewish schools were taken from the poorest part of the City.

APPENDIX IV

FOOD OF THE LABOURING CLASSES

The following tables are extracted from the volume of *Memoranda, Statistical Tables, and Charts,* prepared by the Board of Trade, 1903. (Cd. 1761.)

TABLE *showing average quantity and cost of bread and meat, respectively, consumed by urban workmen's families in* 1903. (*Based on* 286 *returns,* 101 *of which relate to London.*)

Articles.	Weekly Income.				
	Under 25s.	25s. and under 30s.	30s. and under 35s.	35s. and under 40s.	All Incomes.
	Quantities Consumed Weekly.				
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Bread and Flour .	32·17	32·34	33·23	29·96	32·06
Meat (Beef, Mutton, Pork, and Bacon) .	7·42	8·24	9·88	9·89	9·10*
Total . . .	39·59	40·58	43·11	39·85	41·16
	Weekly Cost.				
	S. D.	S. D.	S. D.	S. D.	S. D.
Bread and Flour .	3 6	3 7	3 8	3 4¾	3 6½
Meat (Beef, Mutton, Pork, and Bacon) .	4 8¾	5 7¼	6 11¾	7 1½	6 3¾
Total . . .	8 2¾	9 2¼	10 7¾	10 6¼	9 10¼

* Of this quantity about 1·3 lb. consisted of bacon.

In the following table the families consist of five (two adults and three children):—

TABLE *showing average quantity and cost of certain provisions (other than bread and meat) consumed by urban workmen's families in* 1903. (*Based on* 88* *returns,* 68 *of which relate to London.*)

Articles.	Weekly Income.			
	Under 25s.	25s. and under 30s.	30s. and under 35s.	All Incomes.
	Quantities Consumed Weekly.			
	Lbs.	Lbs.	Lbs.	Lbs.
Butter	1·67	1·54	1·54	1·59
Cheese	1·08	0·90	1·15	1·08
	Pts.	Pts.	Pts.	Pts.
Milk	3·70	4·81	10·33	8·38
	Lbs.	Lbs.	Lbs.	Lbs.
Potatoes	10·8	15·09	13·80	13·68
Rice, Tapioca, Oatmeal, etc.	0·63	3·08	2·66	2·36
Tea	0·73	0·59	0·59	0·62
Sugar	3·90	4·72	5·08	4·96
	Weekly Cost.			
	s. d.	s. d.	s. d.	s. d.
Fish †	0 5	0 7¼	0 9¼	0 8¼
Eggs †	1 7¼	0 11¼	1 1	0 11½
Butter	0 4½	1 6½	1 11¼	1 8½
Cheese	0 8¼	0 7½	0 9	0 8½
Milk ‡	0 9‡	1 1¾‡	1 10‡	1 5‡
Potatoes	1 0½	1 2½	1 3	1 2
Other Vegetables and Fruit †	0 5	0 10¾	1 2	1 0½
Rice, Tapioca, Oatmeal, etc.	0 1½	0 6¼	0 8½	0 6¼
Tea	1 0¼	0 10½	1 1	0 11¾
Sugar	0 7½	0 8¾	0 11¾	0 10
Jam, Syrup, etc. †	0 2½	0 4¼	0 8¾	0 7

* Except in the case of eggs and cheese, which are based on 286 returns, 101 of which relate to London.

† The quantities of these articles cannot be stated.

‡ The cost given includes condensed as well as fresh milk, the latter only being stated in the quantity above.

APPENDIX V

INITIAL COST OF FITTING OUT A MILK DEPÔT

"Steriliser"		£70	0	0
Boiler		30	0	0
Bottling machine		9	6	0
Cleansing fittings	say	5	0	0
30 gross bottles		30	0	0
Wire baskets	say	5	0	0
Weighing machine		0	13	9
Churns, etc.		4	0	0
		£153	19	9
Conversion of premises	say	150	0	0
		£303	19	9

These items of apparatus are selected from various sources, and for the prices mentioned suitable appliances of good pattern and quality can be obtained.

APPENDIX VI

PHYSICAL EXERCISES

The following excellent suggestions to teachers for their guidance in giving physical exercises to elementary school children are extracted from the handbook of *Physical Exercises and Drill* prepared for the Bradford and Shipley School Boards by Mr H. F. Pearman, Superintendent of Physical Exercises :—

PRACTICAL SUGGESTIONS.

As a rule, ten or fifteen minutes every day should be devoted to Physical Exercises and Drill, and, in addition to this, Standards III.-VII. should have once a week, a lesson in the playground of thirty minutes' duration.

When exercises are taken in school the doors and windows should be opened wide before the lesson begins, so that the air of the room may be thoroughly renewed.

The time most suitable for exercises is about an hour before meal times. A sitting-down lesson should always follow a lesson in Physical Exercises.

The exertion required for the exercises should never be severe or prolonged, and the head-teachers should make it their duty to see that no child takes part in them who might be in any way injured by the practice.

Physical Exercise should be considered as quite distinct from recreation, and should only take the place of recreation in wet or severe weather.

Do not allow the scholars to take lessons in the playground without covering on their heads.

Take up position in the playground according to the weather, etc. Choose exercises according to the weather.

Let one of the chief aims of the teacher be a good carriage of body.

Never keep a class in a tiring position when explaining a movement. Verbal directions must be few, concise, and as simple as possible. If lectures are given on the value of exercises, they should be given whilst the children are sitting in school.

Whether the exercise has been performed correctly or not, never keep the scholars too long at any one exercise. *Variety* pays from all points of view.

At intervals during long lessons march the children round and back to places in various ways, and in all lessons give frequent rests—stand at ease and stand easy. Patterns or illustrations should be given whilst the scholars are standing at ease or in an easy position.

At all times whether the scholars are sitting, standing, or working, see that they breathe through the nostrils, not through the mouth.

In all lessons, arm movements and leg movements should be taken alternately, and combined, so that in effect the development is regular, the circulation uniform, and the whole body benefited. The longer lessons should always conclude with marching.

Remember that exercises for children must be moderate in amount and easy of accomplishment. Those exercises which readily become semi-automatic and which can be associated with music are the best. Exercises of skill, strength and endurance, and exercises with fixed apparatus such as parallel and horizontal bars, must be left for a later period in life. The prime object of Physical Exercises for school children is to promote healthy physical development of the whole body, symmetrically, harmoniously, and in good proportion.

TABLE SHOWING THE VARIOUS WAYS IN WHICH INFECTION IS CARRIED

Infection by or from the patient himself	Direct		Simple contact	Small-pox.
				Measles.
				German measles.
				Scarlet fever.
				Influenza.
				Whooping-cough.
				Mumps.
				Ophthalmia.
				Impetigo.
	Mediate	Excreta and objects contaminated by the patient	Dejecta	Typhoid fever.
				Epidemic diarrhœa.
			Expectoration	Tuberculosis.
				Diphtheria.
			Desquamation	Small-pox.
				Measles.
				German measles.
				Scarlet fever.
			Clothes	Small-pox.
				Scarlet fever.
				Typhoid fever.
				Erysipelas.
			Toys	Diphtheria.
				Scarlet fever.
				Erysipelas.
			Third person	Scarlet fever.
				Small-pox.
				Whooping-cough.

Infection by air	Air expired by the patient		Innocuous, unless actually contaminated by coughing or sneezing.
	Air in unventilated rooms		Dangerous if charged with infective dust (tuberculosis, epidemic diarrhœa).
	Open air		Small-pox (possibly).
Infection by water			Typhoid fever. Epidemic diarrhœa.
Infection by the soil	Dust, mud		Rheumatism (?). Typhoid fever. Epidemic diarrhœa. Tetanus.
Infection by food	Milk		Tuberculosis. Typhoid fever. Epidemic diarrhœa. Diphtheria. Sore throat. Septicæmia. Scarlet fever (?). Enteritis.
	Meat		Tuberculosis. Septic enteritis.
	Shellfish		Typhoid fever. Diarrhœa.
	Tinned foods		Diarrhœa. Septic enteritis.
Infection by insects	Mosquitoes		Malaria. Yellow fever.
	Fleas		Plague.
	Flies	Direct	Ophthalmia. Small-pox (?).
		Mediate	Typhoid fever. Epidemic diarrhœa.
Infection by domestic animals	Dog		Hydrophobia.
	Horse		Glanders.
	Rat		Plague.
	Parrot		Psittacosis.

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